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TIMBER MANAGEMENT PLAN

SAN JUAN WORKING CIRCLE

SAN JUAN NATIONAL FOREST

Colorado
Region 2

July 1, 1962 -June 30, 1972

U. S. FOREST SERVICE

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TIMBER MANAGEMENT PLAN

SAN JUAN WORKING CIRCLE

San Juan National Forest

Colorado
Region 2

July 1, 1962 - June 30, 1972

Submitted: June 13, 1962 By /s/ Stuart H. Buehling
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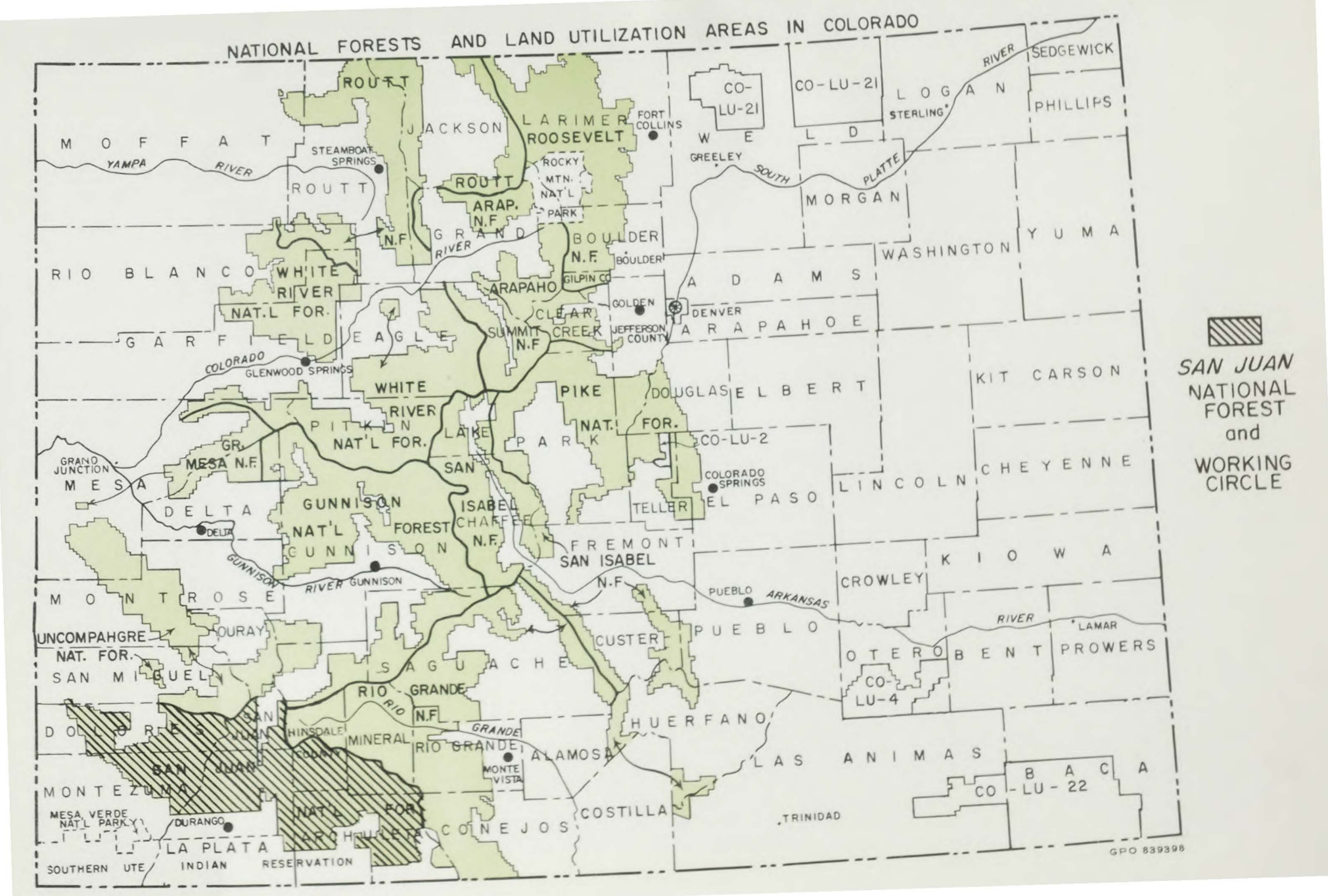
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SUMMARY OF PLAN

Table 1

Annual Allowable Cut From Regulated Area

Sawtimber Types	Allowable Cut Area Acres	Yields Cubic Feet MM C.F.	Yields Board Feet Int. 1/4" MM B.F.	Yields Board Feet Scrib.Dec.C MM B.F.
Douglas-fir - White Fir	2,500	6.0	29.0	25.0
Ponderosa Pine	3,500	2.5	11.3	9.5
Spruce-Fir	4,500	18.5	96.0	82.5
Aspen	3,000	4.3	12.0	10.0
Total	13,500	31.3	148.3	127.0

Table 2

Yield By Species

Species	M B.F. Scribner Dec. C — Sawtimber Types: Douglas-fir White Fir	Ponderosa Pine	Spruce-Fir	Aspen	Total
Douglas-fir	8,600	300	5,000	300	14,200
Ponderosa Pine	3,000	7,600	--	200	10,800
White Fir	8,800	900	2,000	600	12,300
Subalpine Fir	--	--	14,000	400	14,400
Engelmann Spruce	1,600	--	59,000	500	61,100
Total Conifers	22,000	8,800	80,000	2,000	112,800
Aspen	3,000	700	2,500	8,000	14,200
Grand Total	25,000	9,500	82,500	10,000	127,000

Table 3

Allocation of Allowable Cut to Ranger Districts

Types	Glade		Dolores		Mancos		Columbine		Animas		Pine		Piedra		Pagosa		Total	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Douglas-fir-White Fir	18	0.7	81	3.3	120	4.8	168	6.7	514	20.5	227	9.1	882	35.3	490	19.6	2,500	100
Ponderosa Pine	1,092	31.2	70	2.0	326	9.3	136	3.9	333	9.5	227	6.5	861	24.6	455	13.0	3,500	100
Spruce-Fir	14	0.3	1,148	25.5	387	8.6	747	16.6	670	14.9	234	5.2	512	11.4	788	17.5	4,500	100
Aspen	225	7.5	810	27.0	324	10.8	315	10.5	318	10.6	192	6.4	387	12.9	429	14.3	3,000	100
Total	1,349	10.4	2,109	15.5	1,157	8.6	1,366	10.1	1,835	13.5	880	6.5	2,642	19.5	2,162	15.9	13,500	100

Table 4

Area Summary By Ownership, Land Classification and Stand Size Classes

Acres

Land Classification and Stand Size Classes	National Forest	Other Federal	State, County and Municipal	Private	Total
Commercial Forest Land - Unreserved					
Large Sawtimber	371,013	490	440	19,240	391,183
Small Sawtimber	543,985	935	1,355	53,523	599,798
Poletimber	215,903	525	265	29,741	246,434
Seedling-Sapling	22,124	--	--	1,161	23,285
Nonstocked	34,772	140	105	4,171	39,188
Subtotal	1,187,797	2,090	2,165	107,836	1,299,888
Reserved					
Productive	114,992	--	783	--	115,775
Nonproductive	22,744	--	600	--	23,344
Non-Forest	99,500	--	2,300	--	101,800
Noncommercial	201,821	855	690	31,463	234,829
Non-Forest	217,880	3,660	1,005	81,986	304,531
Grand Total	1,844,734	6,605	7,543	221,285	2,080,167

Table 5

Area of National Forest Commercial Forest Land
By Types, Stand Size Class and Stocking Class

Thousand Acres

Stand Size and Stocking Classes	Types: Douglas-fir White-Fir	Ponderosa Pine	Lodgepole Pine	Spruce-Fir	Total Conifers	Hardwood	Grand Total	%
Large Sawtimber								
Well	-	-	-	11	11	-	11	
Medium	63	24	-	118	205	-	205	
Poor	32	82	-	40	154	-	154	
Unclassified	-	-	-	-	-	1	1	
Total	95	106	-	169	370	1	371	31
Small Sawtimber								
Well	-	-	-	6	6	-	6	
Medium	27	9	-	87	123	-	123	
Poor	60	188	-	107	355	-	355	
Unclassified	-	-	-	-	-	60	60	
Total	87	197	-	200	484	60	544	46
Poletimber								
Well	2	3		5	10	-	10	
Medium	3	8		9	20	-	20	
Poor	1	16		9	26	-	26	
Unclassified	-	-		-	-	160	160	
Total	6	27		23	56	160	216	18
Seedling-Sapling								
Well	-	-	-	-	-	-	-	
Medium	-	-	1	3	4	-	4	
Poor	-	-	-	1	1	-	1	
Unclassified	-	-	-	-	-	17	17	
Total	-	-	1	4	5	17	22	2
Nonstocked	1	25	-	8	34	-	34	3
Grand Total	189	355	1	404	949	238	1187	
Percent	16	30	-	34	80	20		100

Table 6

Total Volume for Commercial Forest Lands
By Ownership

Ownership	Total Volume: Trees 9.0" D.B.H. and Larger: Int. ¼" MM B.F.	Scribner Dec. C MM B.F.	Cubic Ft. MM C.F.	Trees 5.0" D.B.H. To 9.0" D. B. H. Cubic Feet MM C.F.	Total MM C.F.
Softwood Types					
National Forest	11,027	9,486	2,179	41	2,220
State and County	39	33	5	1	6
Private	820	700	158	15	173
Total	11,886	10,219	2,342	57	2,399
Hardwood Types					
National Forest	494	397	105	181	286
State and County	4	3	0	1	1
Private	85	70	11	10	21
Total	583	470	116	192	308
Grand Total					
National Forest	11,521	9,883	2,284	222	2,506
State and County	43	36	5	2	7
Private	905	770	169	25	194
Total	12,469	10,689	2,458	249	2,707

Table 7

Summary of Total Area, Net Volume Per Acre and Total Volume By Species
For Major Sawtimber Types - National Forest Unreserved Lands
Scribner Dec. C Log Rule - Trees 9.0 Inches D.B.H. and Larger

Types	Area M Acres	Volume Per Acre Bd. Ft.	Species: Douglas-fir	Ponderosa Pine	Sub-Alpine Fir	White Pine Group	White Fir	Engelmann Spruce	Blue Spruce	Aspen	Total	Percent
						MM Bd. Ft.						
Douglas-fir White Fir	182	10,357	650	222	8	8	662	83	41	211	1,885	18.9
Ponderosa Pine	302	2,726	26	663	--	--	73	--	7	54	823	8.2
Spruce - Fir	370	18,363	408	--	1,155	--	136	4,823	--	272	6,794	68.0
Aspen	59	3,500	25	--	20	--	48	30	10	360	493	4.9
Total	913	10,947	1,109	885	1,183	8	919	4,936	58	897	9,995	100.0
Percent			11.1	8.9	11.8	0.1	9.2	49.3	0.6	9.0		100.0

Table 8

Periodic Annual Growth and Mortality of Sawtimber Types
Based on Forest Survey Data - Past 10 Year Period

Sawtimber Types	Sawtimber Area	Annual Gross Growth Per Acre		Annual Mortality Per Acre		Annual Net Growth Per Acre	
	Acres	Bd.Ft.	Cu. Ft.	Bd. Ft.	Cu. Ft.	Bd. Ft.	Cu. Ft.
Douglas-fir-White Fir	181,915	14.76	3.54	22.43	5.38	-7.67	-1.84
Ponderosa Pine	302,336	19.67	4.92	8.68	2.17	11.00	2.75
Spruce - Fir	369,930	41.71	9.31	54.97	12.27	-13.26	-2.96
Aspen	58,692	13.62	3.70	21.49	5.84	-7.86	-2.14
		M B.F.	M C. F.	M B.F.	M C. F.	M B. F.	M C. F.
Forest Totals	912,873	24,864	5,793	28,301	6,517	-3,437	-724

Table 9

Recommended Adjustment Period and Rotation

Type	Adjustment Period	Rotation
	Years	Years
Douglas-fir-White Fir	50	140
Ponderosa Pine	75	140
Spruce - Fir	50	140
Aspen	50	90

Revision Date: June 30, 1972.

TIMBER MANAGEMENT PLAN

for the

SAN JUAN NATIONAL FOREST

INTRODUCTION

The San Juan Working Circle timber management plan constitutes the 10-year action program for the working circle. The plan prescribes the action necessary to meet the long-term objectives in the General Timber Management Statement for the San Juan National Forest.

This plan will be revised by June 30, 1972, and sooner if necessary to meet changing conditions.

Detailed Forest Survey data, from which this plan was formulated, are found on the IBM sheets labeled "1959 Forest Survey, Colorado IBM Sheets, San Juan National Forest, Sample Unit #27," and filed in the office of the Forest Supervisor at Durango, Colorado.

Atlas binders containing compartment records and maps with compartment descriptions including area and volume breakdown by types are kept in the rangers' offices. These records will be kept current for action taken within the compartments.

SUMMARY OF RESULTS UNDER PREVIOUS PLANS

Prior to 1956 there were seven working circles on the forest, as described in the General Management Statement. A major revision of the original management plans was made effective on July 1, 1956, when the seven original working circles were tentatively consolidated into three to bring them into line with the then current pattern of log transportation and sawmilling. The tentative annual allowable cut for these three working circles based on the best available inventory data was set at 50 MM B.F.

The development of still larger mills, better transportation systems, and more efficient hauling and logging equipment, now makes it practicable to manage the timber resources of the San Juan National Forest as a single working circle.

During the period 1956 - 1961 the total actual cut was 83% of the allowable cut as indicated in the tabulation below. Actual cut fell short due to a lack of demand for lumber under poor market conditions.

Table 10

Previous Actual and Allowable Cut

Fiscal Year	Annual Allowable Cut M B. F.	Annual Actual Cut M B. F.
1957	50,000	53,692
1958	50,000	26,460
1959	50,000	49,747
1960	50,000	43,595
1961	50,000	33,859
Total	250,000	207,353

Recent Timber Stand Improvement and Reforestation Accomplishments

Table 11

Artificial Regeneration

Fiscal Year	Planting Acres	Seeding Acres	Complete Ground Preparation Acres	Pruning & Crop Tree Release Acres
1957	162	61	--	631
1958	157	166	--	821
1959	538	223	50	452
1960	843	52	172	655
1961	829	--	589	522

Protection Accomplishments

1. Disease Control

Control of dwarfmistletoe (Arceuthobium vaginatum, Nutt) in ponderosa pine has been accomplished on approximately 1,000 acres by cutting infected trees on timber sales.

Killing of cull aspen trees was done on 246 acres to release advanced reproduction and to prevent the spread of harmful rust diseases and wood decay fungi.

2. Fire Control

During the period 1952 to 1961 the San Juan National Forest had a total of 760 fires -- burning 1,746 acres. This is an average of 175 acres per year which is considerably less than the allowable burn of 220 acres per year.

MANAGEMENT OBJECTIVES

The objective of this plan is to set up a 10-year program working toward the long-range objectives as stated in the General Timber Management Statement.

The specific objectives for the next 10 years will be:

1. Attain a Balanced Distribution of Age Classes

   a. Attain the full allowable annual cut of 13,500 acres (yield 127 MM B.F.) by F.Y. 1972. This means a three-fold increase in sawtimber harvest over the current average annual cut of 40 MM B. F.

   b. Make intensive surveys of all compartments by F.Y. 1972 to determine timber condition classes and priorities of cutting for each major forest type, with particular emphasis on the spruce-fir sawtimber type.

2. Establish and Maintain Growing Stock

   a. Keep commercial forest land fire damage within the burned area objective -- 220 acres per year.

   b. Expand and intensify current insect control programs to attain the following goals:

      (1) Spruce beetle control efforts will be concentrated along lines aimed to accelerate access road construction and timber harvest in the spruce-fir type, and to maintain an annual aerial and ground detection survey which will pinpoint new areas of insect buildup in time to realign sales programs if necessary.

      (2) Effect control of spruce budworm epidemic in the Douglas-fir-White fir forest type by target date of July 1, 1964.

      (3) Intensify current program of Black Hills beetle control through aerial detection and salvage sales.

   c. Control dwarfmistletoe infections in ponderosa pine stands by proper cutting and timber stand improvement practices.

   d. Control animal populations to assure satisfactory regeneration and development of forest growing stock in accordance with multiple-use management guides.

e. Control porcupines and other small mammals harmful to forest growing stock through joint efforts with Fish and Wildlife Service and State Game and Fish Agencies.

f. Attain by F.Y. 1972 a reforestation program of 9,000 acres per year in accordance with the following priorities:

(1) 5,000 acres of cutover land and recent burns.

(2) 3,000 acres of nonstocked old burns and problem watersheds needing restoration.

(3) 1,000 acres of nonstocked forest lands now occupied by oakbrush and off-site aspen.

3. Develop Markets and Attract Industry

a. Publicize accelerated harvest program through prospectuses, brochures, and contacts to encourage installation of new lumber manufacturing facilities.

b. Develop and circulate prospectus for convertible products available on the forest for such uses as pulp, power poles and posts.

4. Encourage Good Timber Management Practices on all Forest Lands Regardless of Ownership

a. Work through the Branch of State and Private Forestry with county, state and other federal agencies towards the completion of a forest inventory of all commercial forest lands adjacent to the San Juan Working Circle within the San Juan Basin Area. This should be completed by F.Y. 1967.

b. Coordinate with other agencies in conducting and sponsoring conferences, training sessions and publicity programs in the timber management field.

REGULATION

Regulation will be by area, with the allowable cut expressed in both area and volume. Control will be by 10-year periods. Undercuts that have built up during the period may be cut during the remainder of the same period, provided that the total cumulative cut does not exceed the allowable periodic cut by more than 10 percent. The control of the allowable cut will be by type area and not by species or products and will be in volumes sufficient to meet area control objectives. Sales programs will normally exceed allowable cut objectives; otherwise the average annual cut will fall short of meeting the 10-year objective. Emphasis will be placed on increasing the current actual cut until experience shows the allowable cut objectives are assured.

The financed cut for any one year is based upon volume and includes the cut from all regulated types. The financial cut quota should be sufficient to meet both volume and area objectives for the forest as a whole.

If the present relationship between area and volume is found to be out of proportion for the forest as a whole, the volume allowable cut will be adjusted to be consistent with area regulation. No adjustment, however, will be made prior to the end of the first five-year period.

Types to be Regulated

All of the major timber types of the working circle will be regulated since there is demand and market for all species. These types or working groups are:

1. Douglas-fir - White fir
2. Ponderosa Pine
3. Spruce-Fir
4. Aspen

Douglas-fir-White fir will be managed as a working group since the two species are closely related as to location and management requirements.

Rotations

Previous plans used rotations of 160 years to calculate the allowable cut. This plan uses a 75-year adjustment period to convert wild ponderosa pine stands and 50 years to convert wild Douglas-fir-White fir, spruce-fir, and aspen stands to managed stands. A longer adjustment period is not desirable considering the age of the sawtimber stands and the current rate of mortality. It is also questionable if industry can be geared up and a road system constructed to use a shorter conversion period. The adjustment periods are similar to the time required to cut the overaged sawtimber under the Kemp formula schedule.

Growth and mortality will be re-examined at 10-year intervals. If there is a material increase in mortality, the adjustment period will be subject to change.

The following rotation periods are used in the Kemp formula:

Douglas-fir-White fir type	-- 140 years
Ponderosa Pine type	-- 140 years
Spruce-Fir type	-- 140 years
Aspen type	-- 90 years

This is the same as used throughout the Region. Specific rotations for the working circle will be set up as soon as the data becomes available. This will be before the next revision of the plan.

Method of Cutting

Region Two's Management Guides for Ponderosa Pine, Engelmann Spruce, Aspen and Associated Species (FSH2-2442.8) will be applied in designating timber for cutting. The ponderosa pine guide will also be used for the Douglas-fir-White fir working group. These guides provide for clear cutting by groups, patches, strips, or stands with even-age management as the objective.

Presale prescriptions will designate the method or methods of cutting, including the size and locations of the clear-cut areas and special treatment requirements for each timber sale. The presale prescriptions will be based upon the condition of the stand and the multiple-use objective of the land as defined in the Multiple-Use Management Guide for Western Colorado and district plans.

Timber management action along roadsides, recreation areas, streamsides, waterfronts, and buffer zones will be for the purpose of protecting, improving, and regenerating stands of timber that will be adequate for the use to be made of the area.

The cutting of timber within areas developed for intensive recreation use or areas for development during the next 20 years will be in accordance with the recreation plan for the specific area and will include the protection of the public from hazardous trees and the protection of adjoining commercial stands of timber from disease and insects. Cutting of timber within the roadside zones and dispersed areas of U.S. Highways 84, 160, and 550, as well as state, county and major forest highways may be prescribed by the Forest Supervisor when such is necessary for maintaining a healthy stand of timber.

A pleasant appearance can normally be obtained in cutover areas in the special treatment zones by manipulating the size, shape and location of the group, patch or strip to be clear cut and doing a good job of slash treatment. A complete slash disposal job will be accomplished immediately after logging on all areas where esthetic values are important. Adequate reforestation work will be done in

order that a satisfactory stand will be established within three years after cutting.

Water production is very important on this working circle. All phases of timber harvesting, including road construction, will be carried out in a manner that will not be detrimental to the soil and water use.

Growing Stock

The forest inventory divides the major timber types into stand size classes and stocking classes or crown density classes. The definitions for the classes are contained in Forest Survey Standards FSH 4819 and the field instructions for the 1955-1960 project.

The standard tree size classes are:

Sawtimber	- 11.0" d.b.h. and larger
Poletimber	- 5.0" to 10.9" d.b.h.
Seedling-Saplings	- 1.0" to 4.9" d.b.h.

Sawtimber stands have a net volume of 1,500 board feet (International $\frac{1}{4}$" Log Rule) or more per acre in trees 11.0" d.b.h. and larger. Poletimber stands are those that fail to meet the definition for sawtimber stands, are at least 10 percent stocked with trees 5.0" d.b.h. and larger and the plurality of cubic volume is in trees 5.0" to 10.9" d.b.h. Seedling-sapling stands are those that do not meet the above conditions and are at least 10 percent stocked with trees 1.0" to 4.9" d.b.h. Nonstocked stands are those that are less than 10 percent stocked and do not meet the minimum conditions for the above classes.

Stocking classes or crown density classes refer to the extent to which growing space is utilized by present growing stock trees of commercial species. The classification is based on the percent of crown closure. The stocking classes for sawtimber stands, as used in this plan, are for the percent of closure of sawtimber crowns. The stocking classes for poletimber and seedling-sapling size stands are based on crown closure for all trees regardless of their size.

Classification	Percent of Crown Closure
Nonstocked	0- 9
Poorly stocked	10-39
Medium stocked	40-69
Well stocked	70+

Condition classes were not used in the survey.

The forest inventory did not type by age classes. The only available age data comes from the site trees. The age of two site trees per plot was determined. The distribution of site tree age classes is used to indicate the amount of the type in each age class.

Most of the spruce-fir sawtimber type is past rotation age.

Table 12 summarizes the distribution of stand size classes for the four regulated major types.

Table 12

Distribution of Type Area By Stand Size Classes

Stand Size Class	Douglas-fir-White Fir Working Group			Ponderosa Pine Type		
	M Acres	Percent of Type	Percent Operable	M Acres	Percent of Type	Percent Operable
Sawtimber	182	96	70	303	85	90
Poletimber	6	3	70	27	8	90
Seedling-Sapling	0	0	70	-	0	90
Nonstocked	1	1	70	25	7	90
Total	189	100	70	355	100	90

Stand Size Class	Spruce-Fir Type			Aspen Type		
	M Acres	Percent of Type	Percent Operable	M Acres	Percent of Type	Percent Operable
Sawtimber	369	92	60	59	25	70
Poletimber	23	5	60	160	68	70
Seedling-Sapling	4	1	60	17	7	70
Nonstocked	8	2	60	0	0	70
Total	404	100	60	236	100	70

The operability factor consists of a discount of gross unreserved area to exclude submarginal sites at timberline and steep, rocky terrain clearly inoperable under present logging methods.

Growth and Mortality

Growth and mortality are based on Forest Survey data taken from 208 locations. The calculation is explained under "Supporting Data." Table 8 shows the growth and mortality for the sawtimber types. The net annual growth is -37.64 board feet, Scribner Decimal C, per acre for all sawtimber types, based on the past 10 years.

Mortality is due to insects and disease. Most of the sawtimber is overmature and present mortality rate can be expected to continue until such time that the overmature timber is harvested.

Empirical yield tables are not available as no experience has been built up on what can be expected under management. However, it is estimated that a potential growth of from 150 to 200 board feet per acre per year, depending on the sites, can be expected under good management.

Calculation of Allowable Cut

Douglas-fir - White Fir Working Group

The total area of Douglas-fir - White fir type is 189,000 acres of which 96 percent is in sawtimber sizes. It is estimated that 70 percent of the type is operable.

A 50-year adjustment period has been selected to convert the Douglas-fir - White fir sawtimber stands from a wild to a managed condition. This 50-year adjustment period is used to quickly remove the overmature sawtimber thus reducing additional heavy mortality caused by spruce budworm and bark beetle attacks in these stands. As far as practicable, the oldest stands will be harvested first to minimize losses and to favor growth.

Table 8 shows that the periodic mortality offsets the growth. It is therefore assumedthat there will be no net growth in the sawtimber type during the adjustment period. The allowable cut is calculated on straight area, i.e., area in the sawtimber type divided by the adjustment period and discounted for inoperability.

The annual allowable cut for the next 10 years is --

$$\frac{182{,}000 \text{ acres}}{50 \text{ years}} = 3{,}640 \times 70\% \text{ (operability factor)} = 2{,}500 \text{ acres per year.}$$

The yield from the area allowable cut is determined by applying stand Table 19 to the acres.

2,500 acres x 2,484 cu. ft. per acre = 6,210 M C.F. or 6 MM C.F. in trees 5.0" d.b.h. and larger, all species.

The following factors are used to convert the total cubic feet to board feet.

Cubic feet to Scribner Decimal C = 4.17

Cubic feet to International $\frac{1}{4}$" = 4.86

Scribner Decimal C volume is 6.0 MM C.F. x 4.17 = 25 MM B.F.
International $\frac{1}{4}$" volume is 6.0 MM C.F. x 4.86 = 29 MM B.F.

The following is the yield broken down by species.

Species	Cubic Feet M C.F.	Board Feet Scribner Dec. C M B.F.	Board Feet Int. 1/4" M B.F.
Douglas-fir	1,970	8,600	9,700
Ponderosa Pine	640	3,000	3,500
White Fir	2,150	8,800	10,000
Engelmann Spruce	240	1,600	1,800
Total Conifers	5,000	22,000	25,000
Aspen	1,000	3,000	4,000
Grand Total	6,000	25,000	29,000

The Kemp formula for comparative purposes gives an annual allowable cut of 2,300 acres.

$$\frac{182{,}000 \times 7 + 6{,}000 \times 5 + 1{,}000}{4 \times 140} = 2{,}300 \text{ acres per year.}$$

2,300 acres x 2,484 cu. ft. = 5,700 M C.F.

Since most of the Douglas-fir - White fir type has an understory of various-sized advanced reproduction, there will be a fairly good distribution of stand size classes at the end of the adjustment period.

Ponderosa Pine Type

The total area of ponderosa pine type is 355,000 acres of which 85 percent is in sawtimber sizes. It is estimated that 90 percent of the type is operable.

Most of this area has been cut over at least once during the past 60 years. In general, the present degree of stocking is not good, since 44 percent of the total pine area is classed as poorly stocked or nonstocked; the mortality as shown in Table 8, however, is comparatively low. Therefore, a 75-year adjustment period has been selected to convert the wild ponderosa pine stands to a managed condition. As far as practicable, the oldest stands will be harvested first to minimize losses and to favor growth. The periodic annual net growth is negligible.

The allowable annual cut by area is based on a straight area calculation and applying the volume from stand Table 21.

Straight area control, (Area divided by adjustment period) is --

$$\text{Sawtimber acres} \div \text{Adjustment period} \quad \frac{303{,}000 \text{ acres}}{75 \text{ years}} = 4{,}040 \times .90 \text{ (O.F.)} = 3{,}500 \text{ acres per year}$$

3,500 acres x 710 cu. ft. = 2.5 MM C.F. per year.

The allowable annual cut for the first 10-year period is --

Area 3,500 Acres
Volume 2.5 MM C.F.

The cubic foot volume is converted to board feet by using a converting factor of 3.80 for Scribner Decimal C and 4.50 for International $\frac{1}{4}$" Log Scale. These computed are --

Scribner Decimal C 2.5 MM C.F. x 3.80 = 9.5 MM B.F.
International $\frac{1}{4}$" 2.5 MM C.F. x 4.50 =11.3 MM B.F.

A comparison with the Kemp formula is as follows --

$$\frac{7(302{,}000) + 5(27{,}000) + 25{,}269}{4 \times 140} = 4{,}073 \text{ acres.}$$

4,073 acres x 710 cu. ft. = 2.9 MM C.F. per year.

The following shows the yield broken down by species:

Species	Cubic Feet M C.F.	Board Feet Scrib.Dec C M B.F.	Board Feet Int. $\frac{1}{4}$" M B.F.
Douglas-fir	100	300	380
Ponderosa Pine	1,900	7,600	9,060
White Fir	200	900	960
Total Conifers	2,200	8,800	10,500
Aspen	300	700	800
Grand Total	2,500	9,500	11,300

Spruce-Fir Type

The total area of the spruce-fir type is 404,000 acres of which 90 percent is in sawtimber size. It is estimated that 60 percent of the type is operable.

A 50-year adjustment period has been selected to convert the spruce-fir sawtimber stands from a wild to a managed condition. This 50-year adjustment period is used to quickly remove the overmature sawtimber thus reducing additional heavy mortality caused by bark beetle attacks in these stands. As far as practicable,the oldest stands will be harvested first to minimize losses and to favor growth.

The allowable annual cut is based on straight area calculation and applying the volume from stand Table 23.

$$\text{Sawtimber acres} \quad \frac{369{,}000 \text{ acres}}{50 \text{ years}} = 7{,}400 \times .60(\text{O.F.}) = 4{,}500 \text{ acres per year.}$$

4,500 acres x 4,097 cu. ft. = 18.5 MM C.F. per year.

The allowable annual cut for the first 10-year period is --

Area	4,500 acres
Volume	18,500 M Cubic Feet

The cubic foot volume is converted to board feet by using a converting factor of 4.48 for Scribner Decimal C and 5.19 for the International $\frac{1}{4}$" Log Scale. These computed are --

Scribner Decimal C - 18.5 MM C.F. x 4.48 = 82.5 MM B.F.
International $\frac{1}{4}$" - 18.5 MM C.F. x 5.19 = 96.0 MM B.F.

The yield from the area allowable cut is broken down by species as follow

Species	Cubic Feet M C.F.	Board Feet Scribner Dec. C. M B. F.	Board Feet Int. ¼" M B.F.
Douglas-fir	1,100	5,000	5,800
White Fir	400	2,000	2,300
Subalpine Fir	3,700	14,000	16,200
Engelmann Spruce	12,400	59,000	68,500
Total Conifers	17,600	80,000	92,800
Aspen	900	2,500	3,200
Grand Total	18,500	82,500	96,000

For comparison, the Kemp formula gives the allowable cut as follows --

$$\frac{7(369,930) + 5(22,675) + 3(3,760) + 8,103}{4 \times 140} = 4,953 \text{ acres}$$

4,953 acres x 4,097 cu. ft. = 20.3 MM C.F. per year.

The eminent threat of devastation by spruce beetle epidemics largely dictates the course of action for the immediate future in the spruce-fir type. Although the 50-year adjustment period will result in some imbalance of age class distribution, several factors will emerge in the future to alleviate the situation. For example, extensive areas of aspen type contain an understory of spruce and firs which will eventually take over to help fill the gap in this age class. Also it is quite possible that the future demand for spruce from managed stands will be primarily for wood fiber under a shorter rotation period.

Aspen Type

The total area of the aspen type is 236,000 acres of which 25 percent is in sawtimber sizes and 68 percent in poletimber size. This amounts to 219,000 acres. All of this has or will reach a pathological rotation age during the adjustment period. It is estimated that 70 percent of the type is operable.

A 50-year adjustment period will be used to convert wild aspen stands to a managed condition. It is applied to overmature sawtimber stands and to poletimber stands which will become overmature during the 50-year period.

The only commercial use of aspen anticipated in the near future is for matchstock. Since matchstock is turned on a lathe, bolts with frost cracks, fire scars and rotten centers cannot be used. The average net volume cut per acre from past sales is 3,500 board feet, Scribner Decimal C Log Rule.

The allowable annual cut is based on a straight area calculation. Volumes are obtained from stand Table 25.

Straight area calculation (area divided by adjustment period) is --

$$\text{Sawtimber \& Poletimber acres} \quad \frac{219{,}000 \text{ acres}}{\text{Adjustment period } 50 \text{ years}} = 4{,}380 \times .70 \text{ (O.F.)} = 3{,}000 \text{ acres per year.}$$

3,000 acres x 1,438 cu. ft. = 4,300 M C.F.

The allowable annual cut for the 10-year period is --

Area 3,000 acres
Volume 4,300 M Cubic Feet

The cubic foot volume is converted to board feet by using a converting factor of 2.4 for Scribner Decimal C and 2.8 for the International $\frac{1}{4}$" Log Scale. These computed are --

Scribner Decimal C - 4,300 M C.F. x 2.4 = 10.0 MM B.F.
International $\frac{1}{4}$" - 4,300 M C.F. x 2.8 = 12.0 MM B.F.

The yield from the area allowable cut by species is --

Species	Cubic Feet	Board Feet	
		Scrib.Dec. C	Int. $\frac{1}{4}$"
	M C.F.	M B.F.	M B.F.
Douglas-fir	130	300	360
Ponderosa Pine	90	200	240
White Fir	250	600	720
Subalpine Fir	160	400	480
Eng. Spruce	170	500	600
Total Conifers	800	2,000	2,400
Aspen	3,500	8,000	9,600
Grand Total	4,300	10,000	12,000

For comparison, the Kemp formula gives --

$$\frac{7(58,692) + 5(160,339) + 3(17,009) + 430}{4 \times 90} = 3,500 \text{ acres}$$

3,500 acres x 1,438 cu. ft. = 5.0 M M C.F. per year.

Allowable Cut Beyond the Adjustment Period

There should be very little reduction, if any, in the yield after the adjustment periods for the aspen and ponderosa pine types. The volume per acre for both types should increase due to better quality and stand density.

The yield from the Douglas-fir - White fir and spruce-fir types may have to be reduced before the end or at the end of the adjustment period due to the accelerated cut in high-risk overmature stands. There is no way to prevent this due to the age of the timber. If the timber is not harvested, the chances are that it will be lost due to the heavy mortality from insects and disease.

The current allowable cuts provide for obtaining an acceptable distribution of age classes during the second rotation period.

Cutting Budget

The cutting budget for this period is itemized by compartments and blocks in Table 13. Selection of compartments in which cutting is scheduled was based on the age and the condition of the sawtimber stands. The areas are distributed over the working circle and are within reasonable hauling distances of community centers that either support or could support a sawmill industry. The schedule will permit an orderly harvesting of the working circle, distributed among the administrative blocks or districts in proportion to the total sawtimber stand for each major type within each block.

The volume of timber currently under contract is a significant item in the cutting budget, amounting to approximately 378 MMBF at the start of FY 1963. Several large sale offerings have been made to encourage new mill installations. Additional large sales on the Dolores and Animas Blocks will be offered as soon as practicable to further stimulate new capital investment in expanded milling capacity. Planned sales schedule is summarized as follows for the next 10-year period:

Planned Sales Schedule

Fiscal Year	Douglas-Fir White-Fir MMBF	Ponderosa Pine MMBF	Spruce Fir MMBF	Aspen MMBF	Total MMBF
Under Contract 6/30/62	39.2	41.6	284.6	12.7	378.1
1963	4.6	0.5	150.0	6.5	161.6
1964	10.4	4.0	42.0	19.1	75.5
1965	27.4	18.7	100.3	3.9	150.3
1966	30.0	6.2	39.7	--	75.9
1967	23.9	2.0	50.3	3.5	79.7
1968	15.6	1.7	58.0	--	75.3
1969	18.3	13.6	31.7	8.1	71.7
1970	18.4	10.3	38.7	7.4	74.8
1971	17.5	10.2	40.4	8.4	76.5
1972	16.3	17.1	10.5	14.4	58.3
Total	221.6	125.9	846.2	84.0	1,277.7

A cutting budget will not be set up for sub-sawtimber size material until a demand has been developed for the product. The cutting budget will be coordinated with the needs of the industry and with adjacent working circles.

Table 13

Cutting Budget
F.Y. 1963 - 1972

Case Designation or Timber Sale Unit	Compartment Number	Douglas-fir - White Fir: Area To Be Cut Acres	Douglas-fir - White Fir: Volume To Be Cut MM B.F.	Ponderosa Pine: Area To Be Cut Acres	Ponderosa Pine: Volume To Be Cut MM B.F.	Spruce-Fir: Area To Be Cut Acres	Spruce-Fir: Volume To Be Cut MM B.F.	Aspen: Area To Be Cut Acres	Aspen: Volume To Be Cut MM B.F.	Total: Volume To Be Sold MM B.F.	F.Y. To Be Sold
Glade Block											
*C. H. Ross 10/6/60	008			5,466	13.9					13.9	
*G. E. Hansen 2/16/62	010			120	0.3					0.3	
Sand Rock	001			200	0.5					0.5	1963
Dove	003			600	1.5					1.5	1964
Glade	004			6,000	15.0					15.0	1965
Big Water	002			4,000	10.0					10.0	1969
Block Total				16,386	41.2					41.2	

*Sold but not cut.

(Table 13 Continued)

Table 13 (Continued)

Cutting Budget
F.Y. 1963 - 1972

Case Designation or Timber Sale Unit	Compartment Number	Douglas-fir - White Fir: Area To Be Cut Acres	Douglas-fir - White Fir: Volume To Be Cut MM B.F.	Ponderosa Pine: Area To Be Cut Acres	Ponderosa Pine: Volume To Be Cut MM B.F.	Spruce-Fir: Area To Be Cut Acres	Spruce-Fir: Volume To Be Cut MM B.F.	Aspen: Area To Be Cut Acres	Aspen: Volume To Be Cut MM B.F.	Total: Volume To Be Sold MM B.F.	F.Y. To Be Sold
Dolores Block											
*Thornburg Lbr. Co. 10/28/58	052					530	14.0			14.0	
*C. H. Ross 4/12/61	021					520	10.0			10.0	
*Hunt Food & Ind. 8/18/61	051							24	0.2	0.2	
*D. Millard	021					420	8.8			8.8	1962
Black Mesa #3	052,053					1,100	19.4			19.4	1963
	041,042										
Roaring Fork	036,037,038	500	4.6			6,000	105.6	1,000	3.5	113.7	1963
Taylor Mesa #2	020,021,039					1,100	19.0			19.0	1964
East Stoner	021,022,023							4,355	15.2	15.2	1964
East Stoner #2	023			450	1.2					1.2	1967
Black Mesa #2	052,054					1,000	17.6			17.6	1966
Upper Stoner	020					1,400	24.6			24.6	1968
Little Taylor	022	200	1.8	300	0.8					2.6	1969
Priest Gulch	039			100	0.2			800	2.8	3.0	1970
East Dolores	065					1,300	22.9			22.9	1970
Slope	040			250	0.6			1,400	4.9	5.5	1972
Black Mesa #4								600	2.1	2.1	1972
Block Total		700	6.4	1,100	2.8	13,370	241.9	8,179	28.7	279.8	

*Sold but not cut.

(Table 13 Continued)

Table 13 (Continued)

Cutting Budget
F. Y. 1963 - 1972

Case Designation or Timber Sale Unit	Compartment Number	Douglas-fir -White Fir: Area To Be Cut Acres	Douglas-fir -White Fir: Volume To Be Cut MM B.F.	Ponderosa Pine: Area To Be Cut Acres	Ponderosa Pine: Volume To Be Cut MM B.F.	Spruce-Fir: Area To Be Cut Acres	Spruce-Fir: Volume To Be Cut MM B.F.	Aspen: Area To Be Cut Acres	Aspen: Volume To Be Cut MM B.F.	Total Volume To Be Sold MM B.F.	F.Y. To Be Sold
Mancos Block											
*LaPlata Lbr. Ltd. 5/28/58	030					620	10.9			10.9	
*Hunt Food & Ind. 6/4/58	035	92	1.0			170	3.0	3,300	7.0	11.0	
*W. F. Potts 6/5/59	031					30	0.5			0.5	
*W. F. Potts 4/1/60	034					110	2.0			2.0	
*Hunt Food & Ind. 5/24/60	031							1,100	5.5	5.5	
*Bear Creek #1	036					480	8.5			8.5	1962
Upper Lost Canyon #3	035							860	3.0	3.0	1963
Upper Lost Canyon #2	034	50	0.5			170	3.0	200	0.7	4.2	1964
Starvation	032							600	2.1	2.1	1964
Morgan Canyon	035	80	0.7	300	0.8					1.5	1965
Rampart	030			120	0.3					0.3	1966
Windy Gap	033					200	3.5			3.5	1966
Deer Lick	030,033	200	1.8			200	3.5	1,300	4.5	9.8	1969
Bear Creek #2	036					500	8.8	1,000	3.5	12.3	1970
Spruce Water	025			2,000	5.1					5.1	1972
Cherry Creek	032	50	0.5	400	1.0					1.5	1972
Block Total		472	4.5	2,820	7.2	2,480	43.7	8,360	26.3	81.7	

*Sold but not cut.

(Table 13 Continued)

Table 13 (Continued)

Cutting Budget
F.Y. 1963 - 1972

Case Designation or Timber Sale Unit	Compartment Number	Douglas-fir - White Fir: Area To Be Cut Acres	Douglas-fir - White Fir: Volume To Be Cut MM B.F.	Ponderosa Pine: Area To Be Cut Acres	Ponderosa Pine: Volume To Be Cut MM B.F.	Spruce-Fir: Area To Be Cut Acres	Spruce-Fir: Volume To Be Cut MM B.F.	Aspen: Area To Be Cut Acres	Aspen: Volume To Be Cut MM B.F.	Total Volume To Be Sold MM B.F.	F.Y. To Be Sold
Columbine Block											
*J. S. Weidman 6/21/60	088					700	12.0			12.0	
Grassy	089					740	13.0			13.0	1964
Pinkerton	081			200	0.5					0.5	1966
Dutch Creek	082,083,084	1,900	17.5	4,000	10.2	2,400	40.4	1,800	6.3	74.4	1971
Block Total		1,900	17.5	4,200	10.7	3,840	65.4	1,800	6.3	99.9	

*Sold but not cut.

(Table 13 Continued)

Table 13 (Continued)

Cutting Budget
F.Y. 1963 - 1972

Case Designation or Timber Sale Unit	Compartment Number	Douglas-fir -White Fir: Area To Be Cut Acres	Douglas-fir -White Fir: Volume To Be Cut MM B.F.	Ponderosa Pine: Area To Be Cut Acres	Ponderosa Pine: Volume To Be Cut MM B.F.	Spruce-Fir: Area To Be Cut Acres	Spruce-Fir: Volume To Be Cut MM B.F.	Aspen: Area To Be Cut Acres	Aspen: Volume To Be Cut MM B.F.	Total Volume To Be Sold MM B.F.	F.Y. To Be Sold
Animas Block											
*J. S. Weidman 6/30/52	110			120	0.3					0.3	
*J. S. Weidman 8/27/54	112			320	0.8	180	3.2			4.0	
*Sower Bros. 6/27/55	117	170	1.6	40	0.1	70	1.3			3.0	
*Sower Bros. 8/5/57	116					800	14.0			14.0	
*J. S. Weidman 7/31/58	113					1,290	22.7			22.7	
*San Juan Lbr. 5/22/59	107	130	1.2	760	1.9					3.1	
Stevens #1	106	80	0.7	1,000	2.5					3.2	1964
South Fork	096,097,102	2,900	26.7	1,200	2.9	5,700	100.3	1,100	3.9	133.8	1965
Miller #2	117	220	2.0			60	1.0			3.0	1966
Tank Creek	113							300	1.1	1.1	1969
East Florida	116							300	1.1	1.1	1970
Shearer #1	108	1,000	9.2	1,000	2.5	400	7.0			18.7	1972
Block Total		4,500	41.4	4,440	11.0	8,500	149.5	1,700	6.1	208.0	

*Sold but not cut.

(Table 13 Continued)

Table 13 (Continued)

Cutting Budget
F.Y. 1963 - 1972

Case Designation or Timber Sale Unit	Compartment Number	Douglas-fir-White Fir: Area To Be Cut Acres	Douglas-fir-White Fir: Volume To Be Cut MM B.F.	Ponderosa Pine: Area To Be Cut Acres	Ponderosa Pine: Volume To Be Cut MM B.F.	Spruce-Fir: Area To Be Cut Acres	Spruce-Fir: Volume To Be Cut MM B.F.	Aspen: Area To Be Cut Acres	Aspen: Volume To Be Cut MM B.F.	Total Volume: To Be Sold MM B.F.	F.Y. To Be Sold
Pine Block											
*Lewis Merc. Co. 1/16/61	122					160	3.0			3.0	
*Middle Mtn. #2	122					1,414	23.1			23.1	1962
Lange Canyon	134			100	0.3					0.3	1966
Indian Creek	122					450	8.0			8.0	1967
Saul's Creek	133			200	0.5					0.5	1968
East Creek	125,126,127	1,600	14.7	1,100	2.8	1,600	28.2	700	2.5	48.2	1969
Vallecito	120	120	1.1	200	0.5			400	1.4	3.0	1972
Block Total		1,720	15.8	1,600	4.1	3,624	62.3	1,100	3.9	86.1	

*Sold but not cut.

(Table 13 Continued)

Table 13 (Continued)

Cutting Budget
F.Y. 1963 - 1972

Case Designation or Timber Sale Unit	Compartment Number	Douglas-fir -White Fir: Area To Be Cut Acres	Douglas-fir -White Fir: Volume To Be Cut MM B.F.	Ponderosa Pine: Area To Be Cut Acres	Ponderosa Pine: Volume To Be Cut MM B.F.	Spruce-Fir: Area To Be Cut Acres	Spruce-Fir: Volume To Be Cut MM B.F.	Aspen: Area To Be Cut Acres	Aspen: Volume To Be Cut MM B.F.	Total Volume To Be Sold MM B.F.	F.Y. To Be Sold
Piedra Block											
*San Juan Lbr. 9/18/56	162	150	1.4	25	0.1	5	0.1			1.6	
*V. W. Day 5/20/59	145			120	0.3					0.3	
*San Juan Lbr. 6/10/59	141	376	9.2	2,553	11.2					20.4	
*L. Bartholomew 3/22/60	156			80	0.3					0.3	
*San Juan Lbr. 7/31/61	158	2,051	17.4	2,403	11.2	414	7.0			35.6	
*Mosca	160,161 125,149,150					6,600	116.1			116.1	1962
*O'Neal Park	156	380	3.5	440	1.1					4.6	1962
Horse Mtn. #2	151	2,100	19.3	2,000	5.1	200	3.5			27.9	1966
Weminuche	161,164	1,600	14.7			2,300	40.5			55.2	1967
Williams Creek	163	1,000	9.2	300	0.8	100	1.8	1,000	3.5	15.3	1967
Cottonwood	157	500	4.6	500	1.2	400	7.0			12.8	1968
Middle Fork	162							600	2.1	2.1	1971
Pagosa Creek	158							800	2.8	2.8	1972
Block Total		8,157	79.3	8,421	31.3	10,019	176.0	2,400	8.4	295.0	

*Sold but not cut.

(Table 13 Continued)

Table 13 (Continued)

Cutting Budget
F.Y. 1963 - 1972

Case Designation or Timber Sale Unit	Compartment Number	Douglas-fir-White Fir		Ponderosa Pine		Spruce-Fir		Aspen		Total	F.Y. To Be Sold
		Area To Be Cut Acres	Volume To Be Cut MM B.F.	Area To Be Cut Acres	Volume To Be Cut MM B.F.	Area To Be Cut Acres	Volume To Be Cut MM B.F.	Area To Be Cut Acres	Volume To Be Cut MM B.F.	Volume To Be Sold MM B.F.	
Pagosa Block											
*H. Smith Co. 6/6/60	188			35	0.1					0.1	
*San Juan Lbr. 9/12/60	180	420	3.9			1,380	24.4			28.3	
Wolf Creek	170					1,420	25.0			25.0	1963
Navajo Peak	196	1,000	9.2			400	7.0	300	1.1	17.3	1964
Fish Creek	182,185	940	8.7			800	14.1			22.8	1966
East Fork #1	170,171	1,200	11.0			1,500	26.4			37.4	1968
Fourmile	167,168	2,000	18.4	4,000	10.1	400	7.0			35.5	1970
Blanco River	185,194	600	5.5	2,900	7.4	200	3.5	900	3.2	19.6	1972
Block Total		6,160	56.7	6,935	17.6	6,100	107.4			186.0	

*Sold but not cut.

TRANSPORTATION

Table 14 shows the road survey and construction program necessary to harvest the timber listed in the 10-year cutting budget. At the present time there are about 75 miles of timber access roads under contract but not yet completed.

Timber purchaser construction or a combination of purchaser and Forest Service construction will be required for the larger offerings. This is necessary since government funds have never been adequate for the construction of all timber access roads.

All roads listed in the table are primarily for the purpose of timber access. Where heavy all-purpose use of the road is anticipated, the Forest Service will finance from all-purpose funds standards above that required to remove the timber.

Right-of-Way Needs

Rights-of-way will be obtained sufficiently in advance of road construction to avoid delays in construction. Table 15 lists the rights-of-way needed and scheduling necessary to meet the cutting budget.

Table 14

Timber Access Road Development Program
F.Y. 1963 - 1972

Case Designation or Sale Unit	Road Name	Road Number	Class	Const. By *	Kind of Work**	Est. Miles	Cost per Mile	Total Cost	Date Survey Needed
Glade Block									
Sand Rock	Sand Rock	2500	SN12	TP	R	3.0	200	600	1963
	Big Canyon	2501	SN12	TP	R	4.0	200	800	1963
Dove	Dove Creek	2502	SN12	TP	R	3.8	500	1,900	1963
	Dove Cutoff	60267	SN12	TP	R	2.0	500	1,000	1963
Glade	Doe Camp	2506	SN12	TP & SC	R	4.0	8,000	32,000	1964
	Glade Canyon	2509	SN12	TP & SC	R	7.0	8,000	56,000	1964
Big Water	Lone Dome	2504	SN12	TP & SC	R	5.0	8,000	40,000	1968
Dolores Block									
Black Mesa	Lone Cone	2534	SN12	TP & SC	C	7.5	10,000	75,000	1963
	Lone Cone	2534	SN12	TP & SC	R	2.0	2,000	4,000	1963
Roaring Fork	Roaring Fork	60435	SN12	TP & SC	C	8.1	15,000	121,500	1962
	Hillside Drive	60436	SN12	TP & SC	C	10.0	15,000	150,000	1963
	Divide	2564	SN12	TP & SC	C	11.4	10,000	114,000	1962
	Scotch Creek	2550	SN12	TP & SC	C	7.9	15,000	118,000	1962
	Grindstone Branch	60358	SN12	TP & SC	C	3.0	10,000	30,000	1963
	Hillside Drive	60436		SC	Bridge	one	20,000	20,000	1962
	Roaring Fork	60435		SC	Bridge	one	20,000	20,000	1962
Taylor Mesa #2	Taylor Mesa	2547	SN12	TP	C	5.0	10,000	50,000	1963
	Priest Gulch	2548	SN12	TP	C	3.0	10,000	30,000	1963
East Stoner	Taylor Rim	60419	SN12	TP	C	6.5	10,000	65,000	1963
Black Mesa #2	Fish Creek	2536	SN12	TP & SC	R	9.5	5,000	48,000	1965
	Willow Divide	2537	SN12	TP & SC	C	7.8	10,000	78,000	1965
Upper Stoner	Taylor Creek	2545	SN12	TP & SC	C	6.0	10,000	60,000	1967
	Upper Stoner	60420	SN12	TP & SC	C	6.0	10,000	60,000	1967

(Table 14 Continued)

Table 14 (Continued)

Timber Access Road Development Program
F.Y. 1963 - 1972

Case Designation or Sale Unit	Road Name	Road Number	Class	Const. By *	Kind of Work**	Est. Miles	Cost per Mile	Total Cost	Date Survey Needed
Dolores Block (Continued)									
Priest Gulch	Priest Gulch	2548	SN12	TP & SC	C	3.0	10,000	30,000	1969
East Dolores	Sheep Mountain	60427	SN12	TP	C	5.0	10,000	50,000	1969
	South Twin Spur	60463	SN12	TP	C	3.0	10,000	30,000	1969
Slope	Section House	60439	SN12	TP & SC	C	3.0	10,000	30,000	1971
Black Mesa #4	Groundhog Point	60403	SN12	TP & SC	C	2.0	8,000	16,000	1971
Mancos Block									
Upper Lost Canyon #3	Morgan Reservoir	60378	SN12	TP & SC	C	2.8	10,000	28,000	1962
Upper Lost Canyon #2	Lost Canyon Branch #1	60374	SN12	TP & SC	C	3.0	10,000	30,000	1963
Starvation	Madden Peak	60316	SN12	TP & SC	C	6.0	10,000	60,000	1963
Morgan Canyon	Rock Springs	2556	SN12	TP & SC	R	3.0	5,000	15,000	1964
Rampart	Rampart	60329	SN12	TP & SC	C	2.0	8,000	16,000	1965
Windy Gap	Transfer	2565	SN12	TP & SC	R	8.0	2,500	20,000	1965
Deer Lick	Lucy Halls	60348	SN12	TP & SC	C	6.0	10,000	60,000	1968
	Lucy Halls	60348		SC	Bridge	one	10,000	10,000	1968
Bear Creek	Lost Canyon	2560	SN12	TP & SC	R	2.0	2,000	4,000	1969
	Aspen Rim	60369	SN12	TP & SC	C	4.0	10,000	40,000	1969
Spruce Water	Hay Camp	2558	SN12	TP & SC	R	6.0	3,000	18,000	1971
	Cedar Spring	60494	SN12	TP & SC	C	3.0	5,000	15,000	1971
Cherry Creek	Starvation	60319	SN12	TP & SC	R	4.0	3,000	12,000	1971

(Table 14 Continued)

Table 14 (Continued)

Timber Access Road Development Program
F.Y. 1963 - 1972

Case Designation or Sale Unit	Road Name	Road Number	Class	Const. By*	Kind of Work**	Est. Miles	Cost per Mile	Total Cost	Date Survey Needed
Columbine Block									
Grassy	Relay Creek	2580	SN12	TP & SC	C	7.0	10,000	70,000	1963
Dutch Creek	Stag Draw	2761	SN12	TP & SC	C	4.0	10,000	40,000	1970
	Dutch Creek	2760	SN12	TP & SC	C	9.0	10,000	90,000	1970
	Bondurant	2762	SN12	TP & SC	C	5.0	10,000	50,000	1970
	Jones	2763	SN12	TP & SC	C	5.0	10,000	50,000	1970
	Long Hollow	2764	SN12	TP & SC	C	3.0	10,000	30,000	1970
	Big Elk	2759	SN12	TP & SC	C	12.0	10,000	120,000	1970
	Pinkerton	2581	SN12	TP & SC	C	5.0	10,000	50,000	1970
Animas Block									
Stevens	Stevens Creek	2738	SN12	TP & SC	C	2.0	10,000	20,000	1963
South Fork	Hermosa Creek	2576	SN12	SC	C	19.0	15,000	285,000	1963
	Ute Trail	2788	SN12	TP & SC	C	10.0	10,000	100,000	1964
	Salt Creek	60540	SN12	TP & SC	C	7.0	10,000	70,000	1964
	South Fork Hermosa	60239	SN12	TP & SC	C	10.0	10,000	100,000	1964
	Cape of Good Hope	60263	SN12	TP & SC	C	5.0	10,000	50,000	1964
	Clear Creek	60497	SN12	TP & SC	C	6.0	10,000	60,000	1964
	Fawn Skin	60543	SN12	TP & SC	C	4.0	10,000	40,000	1964
Miller #2	Willow Creek	60527	SN12	TP & SC	C	4.0	10,000	40,000	1965
Shearer #1	Nelson Fork	60550	SN12	TP & SC	C	6.0	10,000	60,000	1971
	Shearer Creek	60524	SN12	TP & SC	C	5.0	10,000	50,000	1971

(Table 14 Continued)

Table 14 (Continued)

Timber Access Road Development Program
F.Y. 1963 - 1972

Case Designation or Sale Unit	Road Name	Road Number	Class	Const. By*	Kind of Work**	Est. Miles	Cost per Mile	Total Cost	Date Survey Needed
Pine Block									
Indian Creek	Middle Mountain	2724	SN12	TP	C	3.0	10,000	30,000	1966
Saul's Creek	Saul's Creek Cutoff	60165	SN12	TP & SC	C	2.0	10,000	20,000	1967
East Creek	East Creek	2852	SN12	TP & SC	C	16.0	10,000	160,000	1968
Piedra Block									
Horse Mountain #2	Fir	2863	SN12	TP & SC	C	6.0	10,000	60,000	1965
	Coffee Creek	2865	SN12	TP & SC	C	3.0	10,000	30,000	1965
	Dudley Creek	2864	SN12	TP & SC	C	5.0	10,000	50,000	1965
Weminuche	Flag Mtn. Cutoff	2857	SN12	TP & SC	C	8.0	10,000	80,000	1965
	Flag Mountain	2733	SN12	TP	C	5.0	10,000	50,000	1965
Williams Creek	Poison Park	2902	SN12	TP & SC	C	2.0	10,000	20,000	1966
	Hossick Creek	2677	SN12	TP & SC	C	7.0	10,000	70,000	1966
Cottonwood	Plumtaw	2634	SN12	TP & SC	C	8.0	10,000	80,000	1967

(Table 14 Continued)

Table 14 (Continued)

Timber Access Road Development Program
F.Y. 1963 - 1972

Case Designation or Sale Unit	Road Name	Road Number	Class	Const. By *	Kind of Work **	Est. Miles	Cost per Mile	Total Cost	Date Survey Needed
Pagosa Block									
Wolf Creek	Wolf Creek Pass	2722	SN12	TP & SC	C	0.8	10,000	8,000	1962
	Wolf Creek	2725	SN12	TP & SC	C	1.6	10,000	16,000	1962
	Treasure Mountain	60578	SN12	TP & SC	C	3.8	10,000	38,000	1962
	Upper Fall Creek	60039	SN12	TP & SC	C	5.0	10,000	50,000	1962
Navajo Peak	Price Lakes	2731	SN12	TP & SC	C	14.0	10,000	140,000	1963
	Buckles Lake	60000	SN12	TP & SC	R	3.0	10,000	30,000	1963
Fish Creek	Castle Creek	2660	SN12	TP & SC	C	11.0	10,000	110,000	1965
	Upper Fish Creek	60020	SN12	TP & SC	C	1.0	10,000	10,000	1965
East Fork #1	Windy Pass	60038	SN12	TP & SC	C	16.0	10,000	160,000	1967
	East Fork	2667		SC	Bridge	two	20,000	40,000	1967
	Upper Fall Creek	60039	SN12	TP & SC	C	4.0	10,000	40,000	1967
Fourmile	Jackson Mountain	60032	SN12	TP & SC	C	11.0	10,000	110,000	1969
	McCade Creek	2645	SN12	TP & SC	C	7.5	10,000	75,000	1969
	Cade Bridge	60036	SN12	TP & SC	C	3.0	10,000	30,000	1969
	Quien Sabe	60037	SN12	TP & SC	C	6.0	10,000	60,000	1969
	Turkey Creek	2647	SN12	TP & SC	C	9.0	10,000	90,000	1969
	Turkey Creek	2647		SC	Bridge	one	20,000	20,000	1969
Blanco River	Blanco River	2656	SN12	TP & SC	C	10.0	10,000	100,000	1971
	Blanco River	2656		SC	Bridge	one	20,000	20,000	1971
	Bensen Creek	60579	SN12	TP & SC	C	3.0	10,000	30,000	1971
	Blanco River	2656	SN12	TP & SC	R	3.4	5,000	17,000	1971

* TP = Timber Purchaser
SC = Service constructed

** R = Reconstruction
C = Construction

Table 15

Timber Access Right-of-Way Needs

Sale Unit	Road Name	Road Number	Number of Easements	Location	Year Needed
Roaring Fork	Roaring Fork	60435	1	S. 31; T39N; R11W	1962
	Hillside Drive	60436	1	S. 3; T38N; R12W	1962
South Fork	Hermosa Creek	2576	5	S. 2,3,11;T36N;R9W S. 27,34;T37N; R9W:	1962
Saul's Creek	Saul's Creek Cutoff	60165	1	S. 33; T35N; R6W	1966
Cottonwood	Plumtaw	2634	1	S. 2,3; T36N;R2½W	1967
East Fork	Windy Pass	60038	1	S.21; T37N; R1E	1967
	East Fork	2667	2	S.21; T37N; R1E	1967
Priest Gulch	Priest Gulch	2548	1	S. 3; T38N; R12W	1968
East Dolores	Sheep Mountain	60427	1	S. 31;T41N; R9W	1968
Fourmile	Jackson Mountain	60032	1	S. 22; T36N; R1W	1969
	Quien Sabe	60037	1	S. 5; T36N; R1W	1969
	Turkey Creek	2647	1	S.14; T36N; R1W	1969
Starvation	Madden Peak	60316	1	S.32; T36N; R5W	1970
Blanco River	Blanco River	2656	1	S.29; T34N; R1E	1971
	Bensen Creek	60579	1	S.32;T34N; R1E	1971

SALES POLICY

Sale Units

The size and location of individual sale offerings as itemized in Table 13 is designed to balance the cut by major types within each of the eight administrative blocks. Proposed sale units are varied to meet demands of established operators and also to encourage installation of new and expanded manufacturing facilities. Several large offerings in units of 48 MM B.F. to as large as 150+MM B.F. are scheduled for sale to attain stated objectives in developing markets and attracting industry. In addition, numerous offerings of 5 MM B.F. or less will be made to meet the needs of the smaller operators. It will be the general policy on the San Juan Forest to maintain an overall average of at least three years' advance supply of sawtimber under contract.

It may become necessary to substitute or reschedule certain sale offerings to meet changing stand conditions and market developments. In this event, it will be wise to re-analyze the entire sales structure so as to maintain the overall pattern of timber harvest and access road development during the 10-year period.

Points of Manufacture

Sale units will normally be appraised to provide for manufacturing facilities at the nearest logical town within the San Juan Basin area, and to allow lumber hauling costs to nearest railhead. Processing of timber within the sale units will be prohibited, except where necessary to harvest remote areas or to facilitate emergency salvage operations.

Merchantability Specifications

The minimum size sawtimber tree for all species is 10" d.b.h. and to an 8" top d.i.b. Maximum stump height for all species is 12 inches. A live sawtimber tree is merchantable if it contains at least one 8-foot log having a net scale of at least 33-1/3 percent of gross scale and with a minimum net scale of 20 board feet.

Logging Methods

On areas designated for clear cutting, the use of tractors, animals and cable equipment for logging will generally be permissible. On areas where a thrifty residual stand of second growth or advance reproduction must be protected from logging damage, the presale prescription will specify any needed limitations to be included in the timber sale contract.

Slash Disposal

Prescribed slash disposal measures will conform to Region 2 standards and guidelines (FSM and FSH 2480, 5150).

Wherever practicable, slash and debris on clear-cut blocks in the Engelmann spruce type will be completely disposed of by machine piling and burning, as a combined measure to control bark beetles, reduce fire hazard, and prepare the site for regeneration. Standing snags and unmerchantable residual trees of no value will also be disposed of to the fullest practicable extent in connection with machine piling and burning operations on clear-cut spruce blocks. Complete disposal of all slash will also be done on Douglas-fir and white fir cutting blocks which have been designated for clear cutting and artificial regeneration.

In aspen clear-cut areas the logging slash will be lopped and scattered so as to lie close to the ground, and sufficient strips of slash adjacent to key roads will be completely disposed of to reduce fire hazard and restore esthetic values on roads and trails receiving public use.

Logging slash in two-storied ponderosa pine and Douglas-fir - White fir stands will be lopped and scattered so as to lie close to the ground. In addition, slash will be piled and burned, or chipped with power chipper, along roads which receive public use and along sufficient additional roads or fire lanes to break up areas of continuous slash into small units of 80 acres or less. The decision to cut dead snags in these two-storied stands will be made on a case basis, weighing costs and benefits on the individual sale concerned. All snags will be felled on areas where 100 percent slash disposal is done along roads, fire lanes, and other special treatment areas.

TIMBER STAND IMPROVEMENT

Timber stand improvement work to be accomplished with appropriated funds during the first 10-year period will be to release an estimated 50,000 acres of coniferous seedlings and saplings from the competing oakbrush and scrub aspen overstory.

Priorities for timber stand improvement work financed from sale area betterment cooperative funds will be:

1. Release of advance reproduction in all forest types.
2. Control of dwarfmistletoe in ponderosa pine.
3. Pruning of ponderosa pine.

Noncommercial thinnings will have a low priority because of the scarcity of areas of heavy reproduction. An exception is the dense coppice sprouting of aspen after cutting. Thinning in aspen will be confined to the very best sites.

Reforestation

The recent forest inventory indicated that there are approximately 600,000 acres of commercial forest land that is or may be understocked with desirable commercial species. The exact magnitude of a reforestation program cannot be prescribed until these areas are examined in more detail. These areas will be scheduled for examination at the compartment level with an objective of completing the job by not later than the end of F.Y. 1967.

The areas in question are typed as follows:

Poorly Stocked Timber Types

Thousand Acres

Types	Stand Size Classes				
	Sawtimber	Poletimber	Seedlings-Saplings	Nonstocked	Total
Douglas-fir - White fir	7	1	-	1	9
Ponderosa Pine	119	16	-	25	160
Spruce-Fir	22	9	1	8	40
Total	148	26	1	34	209
Aspen					240
Brush					159
Grand Total					608

A compartment management prescription will be prepared for these types and such will be made a part of the compartment records.

In the meantime, the reforestation program will be guided by the following:

A reforestation program on cutover lands using sale area betterment funds has now reached a level of about 2,000 acres per year. As the sale and cutting programs are expanded to meet the new allowable cut objectives, the reforestation program for these cutover lands will also be increased to meet the goal of 5,000 acres per year by 1972.

The reforestation needs on all burns, problem watersheds, and other nonstocked forest lands will have to be financed by appropriated funds. The present program of 700 acres per year to year 1966 will need to be expanded to attain the goal of 4,000 acres per year by 1972.

Table 16

Planting Schedule By Blocks

Acres

District	1963		1964		1965		1966		1967		1968		1969		1970		1971		1972	
	KV	PM	KV	PM	KV	PM	KV	PM	KV	PM	KV	PM	KV	PM	KV	PM	KV	PM	KV	PM
Glade	15		200	200	200	200	200		200	200	200	200	300	400	300	500	400	500	400	700
Dolores	365		400		380		500		600		800	200	1,000		800	200	1,000		1,200	
Mancos	520		145	200	228	200	200	200	200	200	150	200	200	400	400	500	400	500	300	700
Columbine	98	300	200	300	200	300	160	300	100	500	200	500	300	500	100	500		1,000		1,000
Animas	528	200	665		800		600		400		400	200	700	200	800	400	800	300	800	500
Pine	40		45		100		200		300		300		300		300	200	300	700	700	500
Piedra	500		377		285		400	200	700	100	900	200	600	300	800	300	800	200	800	300
Pagosa	33		200		200		200		500		540		500	200	700	200	800	300	800	300
Total	2,099	700	2,232	700	2,393	700	2,460	700	3,000	1,000	3,500	1,500	3,900	2,000	4,200	2,800	4,500	3,500	5,000	4,000
Total KV & P&M	2,799		2,932		3,093		3,160		4,000		5,000		5,900		7,000		8,000		9,000	

PROTECTION

Insects

1. Insect Conditions

The spruce bark beetle (Dendroctonus engelmanni), is a serious and persistent threat to spruce sawtimber stands. Epidemic infestations have recently occurred in the Dolores, Mancos and Animas Blocks during the period 1952-1959, involving some 75,000 M B.F. which was later salvage-logged. Future outbreaks can be expected to occur as long as the spruce stands remain predominantly mature and overmature.

The most serious insect pest in ponderosa pine is the Black Hills bark beetle (Dendroctonus ponderosae) which causes heavy mortality in overmature stands. Continuing control measures are needed to prevent populations of this pest from becoming epidemic.

The Douglas-fir bark beetle (Dendroctonus pseudotsugae) is a constant threat to overmature Douglas-fir, and continuation of such losses can be expected until the overmature component of these stands has been removed.

2. Action Program

Ninety percent of the spruce-fir type is of sawtimber size. Most of this is past rotation age and is considered a high risk. A considerable portion of the type has no access roads, making detection and maintenance control costly. A skeleton road system will be planned and constructed into the type as fast as funds permit. Key purchaser-constructed roads in the spruce type will be kept on the road system for potential insect detection and control needs.

a. Ponderosa Pine and Douglas-fir - White Fir Types - A continuing carefully administered protection program will be maintained so that potential epidemics can be recognized and controlled.

b. Spruce-Fir Type - Logging slash and cull logs that would harbor spruce bark beetles will be bunched and burned before the emergence of the beetles. This will be done by tree-length skidding or any other method that will bunch the material for burning. New timber sale contracts will provide for the slash and cull log treatment described. Also, extended contracts and those that provide for rate redetermination will be modified to require this type of insect control.

Disease

Dwarfmistletoe (Arceuthobium vaginatum f. cryptopodum) is very common in ponderosa pine. Control will normally be by silvicultural methods. For control methods see Region Two's Management Guides for Ponderosa Pine (FSH2-2442.8).

Forty percent of the aspen type is infected with wood-rotting fungi. Control methods are included in Region Two's Management Guides for Aspen (FSH2-2442.8). On new sales, K-V funds will be collected for the treatment of cull aspen on the better sites. These trees will be cut, girdled or poisoned.

Animals

1. Porcupines

   Primary control will be by the Forest Service, using field personnel to the fullest practicable extent in connection with other assigned field work and to supplement employment during off-season periods. Forest users will be encouraged to kill porcupines whenever encountered.

2. Other Rodents

   Damage by mice, chipmunks, gophers, rabbits and squirrels is often severe on newly established young growth. Rodent control on reforested areas is a major item in plantation care and maintenance. Control measures will be undertaken by Forest Service personnel whenever necessary to protect plantations.

3. Big Game

   Damage to ponderosa pine reproduction by big game browsing and trampling is severe at lower altitudinal limits of the ponderosa pine type. Heavily used winter game ranges will not be planted.

4. Domestic Livestock

   Grazing use will generally be correlated with timber use through exclusion of livestock during critical periods in regeneration to gain natural reproduction or aid plantation survival. Where exclusion is necessary, fencing will be done to protect planted and natural regeneration. The fences will be maintained until the saplings are above browse height.

Fire

Provision is made in current sales for reduction of slash or for extra protection for slash areas until the hazard has been abated.

Protection Program

1. A slash disposal plan will be prepared for each sale area in accordance with instructions in FSH 5100.

2. The forest will maintain the necessary equipment and protection organization adequate to keep commercial timberland fires within the annual "PAR" in the fire prevention plan.

SUPPORTING DATA

Compartment Records

Within one year after the approval of this plan, a system of compartment records will be set up for each ranger district. This will consist of Form R2-2400-19 and a map maintained in an atlas-size binder for each compartment within the ranger district. The R2-2400-19 will be posted annually. Since balances may be struck at any time, the form provides for a continuous inventory of the compartment. Compartment descriptions and management prescriptions for at least those compartments scheduled for cutting during the 10-year period will also be included in the atlas binder. Such descriptions may be made on the back of R2-2400-19. Detailed instructions are in the compartment binder.

Timber Inventory

This plan revision is based on inventory data obtained from the cooperative Forest Survey - Region 2 Inventory Program conducted during 1957-1961.

The inventory was conducted to standards prescribed and agreed to by Forest Survey of the Intermountain Forest and Range Experiment Station, and the Division of Timber Management of Region 2. (Reference, Field Instructions for Forest Inventory, Rocky Mountain Region, 1956.) Forest Survey read the plots and processed the data. Region 2 delineated the types on aerial photographs, transferred the types to planimetric maps, printed the final type maps and calculated the area of the types.

Sampling Error

Volume data was based on plots taken at 208 locations. Two plots were taken at each location. The sampling error based on cubic feet in trees 5.0" d.b.h. and larger is 6.4 percent (one standard error).

There is no sampling error in the area determination since the calculations were based on a 100 percent typing job.

Data Processing

Forest Survey of the Intermountain Forest and Range Experiment Station processed the data through the ADP Section of the Pacific Southwest Station. This was done in accordance with the "Plan for Compilation of the Intermountain Forest Survey, Rocky Mountain Area, by IBM Method," October 1, 1956 by Robert M. Miller.

The following NFA tables are on file in the supervisor's office at Durango, Colorado:

Area

NFA 2 - Compartment Area
NFA 3 - Block Area Summary
NFA 4 - Working Circle Area Summary

Volume

NFA 6 - Total average net volume per acre by merchantability class, volume stratum, species and 10" d.b.h. class.

NFA 7 - Total average net volume per acre by merchantability class, volume stratum, species and 2" d.b.h. class.

NFA 31- Adjusted 10-year gross growth and 10-year mortality volume per acre by growing stock.

Miscellaneous Table - Number of trees per acre and various Forest Survey summaries.

Copies of the plot tally sheets are on file in the Forest Supervisor's office.

Aerial photographs on which the photo interpretation was done are on file at the Denver Federal Record Storage Center.

Type map plates are stored in the Division of Timber Management, Forest Service, Denver, Colorado.

Method for Calculating Periodic Annual Net Growth

NFA Table 31 in the IBM binder gives the average adjusted 10-year growth increment and the 10-year mortality by growth stratums, species and 2" d.b.h. classes. The volumes are shown in both board feet and cubic feet.

The growth stratum codes are as follows:

GS-01 - All conifer sawtimber stands.
GS-02 - All conifer poletimber stands.
GS-03 - All conifer seedling and sapling and nonstocked stands.
GS-04 - All hardwood stands.

The gross 10-year growth is based upon merchantability class (MC-1) trees. These are all live, merchantable trees. Mortality is shown under merchantability class (MC-7) trees. These are all mortality trees. The Forest Survey crews estimated the trees that died during the past five years. This volume was then doubled to put it on the same period as the growth. The growth was based on the past 10 years.

The periodic annual net growth per acre can be determined for any given species and d.b.h. class within a growth stratum, or the total of all species in d.b.h. classes within a growth stratum, by subracting the volume shown for the average 10-year mortality (MC-7) from the average 10-year growth increment (MC-1) and dividing by 10.

Growth stratums do not correspond to volume stratums. The total volume of timber in the working circle and the allowable cuts are based upon volume stratums. It was, therefore, necessary to construct a growth and mortality table for the volume stratums using the data given in NFA Table 31. This was done by weighting the growth and mortality of the species in the growth stratums by the percent of each species in the volume stratums.

Chart 1

Percentage Distribution of Site Trees by Major Types

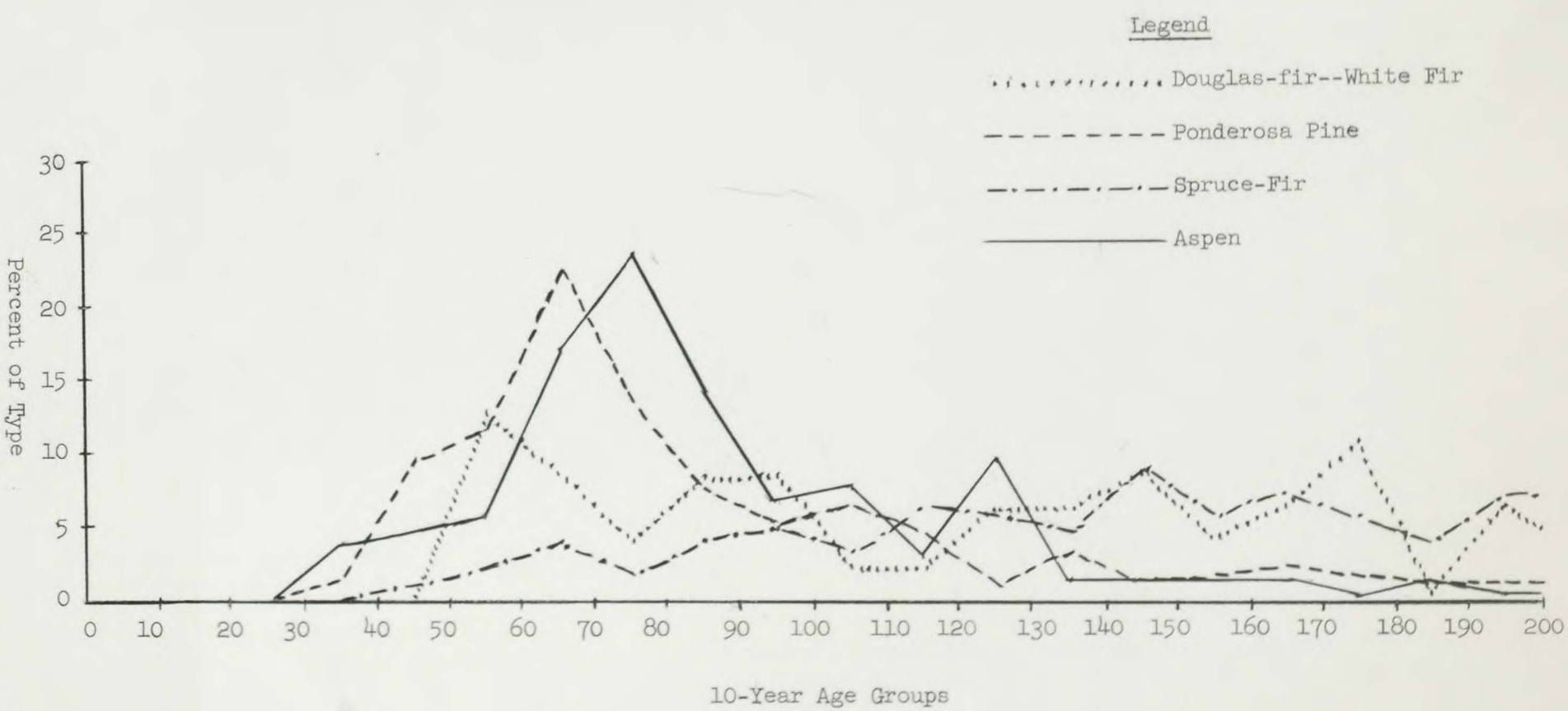


Table 17

Area and Volume By Volume Stratum
National Forest Commercial Forest Land

Volume Stratum No.	Type	Stand Size Class	Stocking Class	No. of Locations	Area in Volume Stratum M Acres	Volume Per Acre: Int. ¼" B.F.	Volume Per Acre: Scribner Dec. C B.F.	Volume Per Acre: Cubic Feet	Total Volume: Int. ¼" MM B.F.	Total Volume: Scribner Dec.C MM B.F.	Total Volume: Cubic Feet MM C.F.
1	Douglas-fir &	LST	Med.	1	63	15,089.26	13,042.69	2,888.74			
1	White Fir Group	LST	Poor	-	32	15,089.26	13,042.69	2,888.74	2,195	1,885	452
2	"	SST	W & M	11	27	16,144.94	13,922.80	3,230.69			
3	"	SST	Poor	10	60	7,267.01	6,173.33	1,622.60			
4	Ponderosa Pine	LST	Med.	2	24	7,470.95	6,254.19	1,817.35	179	150	44
5	"	LST	Poor	5	82	3,925.57	3,509.08	672.23	322	288	55
6	"	SST	Med.	6	9	4,021.95	3,282.43	925.28	36	30	8
7	"	SST	Poor	49	188	2,385.23	1,907.19	575.06	448	359	108
8	Spruce-Fir	LST	All	1	169	42,575.76	37,471.88	7,927.82			
9	"	SST	Well	1	6	32,314.31	26,961.25	6,217.27			
10	"	SST	Med.	44	87	22,420.38	19,396.37	4,319.38	7,847	6,774	1,512
11	"	SST	Poor	13	107	14,852.90	12,717.93	2,883.16			
Total Sawtimber, Conifers				143	854				11,027	9,486	2,179
12	Douglas-fir & White Fir Group	PT	All	3	6			382.74			2
13	Ponderosa Pine	PT	All	5	27			100.68			3
14	Spruce-Fir	PT	All	3	23			1,575.41			36
Total Poletimber, Conifers				11	56			736.57			41

(Table Continued)

Table 17 (Continued)

Area and Volume by Volume Stratum
National Forest Commercial Forest Land

Volume Stratum No.	Type	Stand Size Class	Stocking Class	No. of Locations	Area in Volume Stratum: M Acres	Volume Per Acre: Int. 1/4" B.F.	Volume Per Acre: Scribner Dec. C B.F.	Volume Per Acre: Cubic Feet C.F.	Total Volume: Int. 1/4" MM B.F.	Total Volume: Scrib. Dec. C MM B.F.	Total Volume: Cubic Feet MM C.F.
19	Lodgepole Pine	SS	All		1						
19	Spruce-Fir	SS	All		4						
Total Seedling-Saplings				0	5						
15	Douglas-fir	NS		1	1						
20	Ponderosa Pine	NS			25						
20	Spruce-Fir	NS			8						
Total Nonstocked				1	34						
Total Conifers				155	949				11,027	9,486	2,261
16	Aspen	LST &	All		1			1,771.72		206	2
16	Aspen	SST	All	15	58			1,771.72			103
17	Aspen	PT	All	34	160			1,128.41			181
18	Aspen	SS	All	4	17			613.94			10
Total Aspen				53	236					206	296
21	Cottonwood	SST	All		2			1,772.00			3
Grand Total				208	1,187				11,027	9,692	2,560

Table 18

Area and Volume By Ownership

Type	Stand Size Class	Volume Per Acre: Scribner Dec. C B.F.	Volume Per Acre: Cubic Feet	Other Federal Lands: Area Acres	Other Federal Lands: Volume Scrib. Dec. C M B.F.	Other Federal Lands: Volume Cubic Feet M C.F.	State Lands: Area Acres	State Lands: Volume Scrib. Dec. C M B.F.	State Lands: Volume Cubic Feet M C.F.	County Lands: Area Acres	County Lands: Volume Scrib. Dec. C M B.F.	County Lands: Volume Cubic Feet M C.F.	Private Lands: Area Acres	Private Lands: Volume Scrib. Dec. C M B.F.	Private Lands: Volume Cubic Feet M C.F.
Douglas-fir-White Fir	LST	13,042.69	2,888.74	70	913.0	202.2	105	1,369.5	303.3	-	-	-	5,031	65,617.8	14,533.2
Douglas-fir-White Fir	SST	10,048.07	2,426.65	35	351.7	84.9	215	2,160.3	521.7	5	50.2	12.1	7,456	74,918.4	18,093.1
Ponderosa Pine	LST	4,128.58	930.28	410	1,692.7	381.4	360	1,486.3	334.9	-	-	-	9,860	40,707.8	9,172.6
Ponderosa Pine	SST	1,970.46	591.23	845	1,665.0	499.6	1,015	2,000.0	600.1	140	275.9	82.8	29,990	59,094.1	17,731.0
Spruce-Fir	LST	37,471.88	7,927.82	10	374.7	79.3	-	-	-	300	11,241.6	2,378.3	4,308	161,428.9	34,153.0
Spruce-Fir	SST	18,032.22	4,030.52	40	721.3	161.2	70	1,262.2	282.1	225	4,057.2	906.9	9,094	163,985.0	36,653.5
Total Sawtimber				1,410	5,718.4	1,408.6	1,765	8,278.3	2,042.1	670	15,624.9	3,380.1	65,739	565,752.0	130,336.4
Douglas-fir -White Fir	PT	-	382.74	45	-	17.2	10	-	3.8	-	-	-	1,815	-	694.7
Ponderosa Pine	PT	-	100.68	415	-	41.8	175	-	18.6	10	-	1.0	14,289	-	1,438.6
Spruce-Fir	PT	-	1,575.41	30	-	47.3	-	-	-	6	-	9.5	961	-	1,514.0
Total Poletimber				490	-	106.3	185	-	22.4	16	-	10.5	17,065	-	3,647.3
Douglas-fir-White Fir	S-S														
Ponderosa Pine	S-S												175		
Spruce-Fir	S-S												145		
Total Seedling-Saplings													320		
Total Conifers				1,900	5,718.4	1,514.9	1,950	8,278.3	2,064.5	686	15,624.9	3,390.6	83,124	565,752.0	133,983.7
Aspen	LST														
	SST		1,771.72										2,650		4,695.1
Aspen	PT		1,128.41	35		39.5	80		90.3	142		160.2	12,546		14,157.0
Aspen	S-S		613.94										826		
Total Hardwoods				35		39.5	80		90.3	142		160.2	16,022		18,852.1
Grand Total				1,935	5,718.4	1,554.4	2,030	8,278.3	2,154.8	828	15,624.9	3,550.8	99,146	565,752.0	152,835.8

Table 19

Average Net Volume Per Acre By Species and Volume Stratum

DOUGLAS-FIR - WHITE FIR SAWTIMBER TYPE

Species	Volume Stratum						Weighted Average		Percent	
	01 - DWF9B - All		02 - DWF9AW&M		03 - DWF9A-P		DWF9			
	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.
Douglas-fir	-	-	4,895.58	1,047.39	2,482.71	582.52	3,577.42	788.75	34.5	31.8
Ponderosa Pine	-	-	835.19	181.99	1,762.56	370.04	1,219.56	259.36	11.8	10.4
White Pine Group	-	-	13.88	3.37	69.03	16.14	38.35	9.03	0.4	0.4
White Fir	8,251.29	1,977.95	5,201.34	1,201.94	1,448.62	410.54	3,631.10	876.78	35.1	35.3
Subalpine Fir	-	-	-	-	80.28	18.36	36.53	8.35	0.4	0.3
Engelmann Spruce	-	-	899.87	190.75	12.90	3.17	455.80	96.81	4.4	3.9
Blue Spruce	4,251.20	795.08	-	-	92.45	46.07	233.37	56.74	2.2	2.3
Total Conifers	12,502.49	2,773.03	11,845.86	2,625.44	5,948.55	1,446.84	9,192.13	2,095.82	88.8	84.4
Aspen	540.20	115.71	2,076.94	605.25	224.78	175.76	1,165.05	387.80	11.2	15.6
Grand Total	13,042.69	2,888.74	13,922.80	3,230.69	6,173.33	1,622.60	10,357.18	2,483.62	100	100

Conversion Factors: Cubic Feet to Scribner Decimal C = 4.17
Cubic Feet to International $\frac{1}{4}$" = 4.86

Table 20

Stock and Stand Table

DOUGLAS-FIR - WHITE FIR SAWTIMBER TYPE

Average Per Acre

Volume Stratum					10" D.B.H. Classes															
					1.0-4.9"	5.0-10.9"		11.0-20.9"			21.0-30.9"			31.0-40.9"			Total		
Number	Type	SSC	SC	Species	No. Trees	No. Trees	Cu. Ft.	No. Trees	Cu. Ft.	Bd. Ft.	No. Trees	Cu. Ft.	Bd. Ft.	No. Trees	Cu. Ft.	Bd. Ft.	No. Trees	Cu. Ft.	Bd. Ft.
01	DWF	LST	All	White Fir	-	75.00	397	22.50	496	2,076	12.50	1,085	5,480	-	-	-	110.00	1,978	7,556
				Blue Sp.	-	-	-	2.50	155	757	5.00	640	3,494	-	-	-	7.50	795	4,251
				Aspen	-	-	-	5.00	116	540	-	-	-	-	-	-	5.00	116	540
Subtotal					-	75.00	397	30.00	767	3,373	17.50	1,725	8,974	-	-	-	122.50	2,889	12,347
02	DWF	SST	W&M	Doug.-fir	-	11.36	94	15.46	471	2,127	4.09	380	1,978	0.46	102	569	31.37	1,047	4,674
				Pond.Pine	-	-	-	4.31	160	728	0.23	22	107	-	-	-	4.54	182	835
				White Pine Group	-	-	-	0.23	3	14	-	-	-	-	-	-	0.23	3	14
				White Fir	68.18	38.64	96	22.94	574	2,476	6.14	532	2,688	-	-	-	135.90	1,202	5,164
				Eng.Spruce	-	2.27	11	2.49	107	510	0.68	73	390	-	-	-	5.44	191	900
				Aspen	22.73	54.54	254	12.95	351	1,667	-	-	-				90.22	605	1,667
Subtotal					90.91	106.81	455	58.38	1,666	7,522	11.14	1,007	5,163	0.46	102	569	267.70	3,230	13,254
				Doug.-fir	25.00	15.00	84	10.25	269	1,280	2.50	229	1,090	-	-	-	52.75	582	2,370
				Pond.Pine	-	2,50	17	3.50	143	660	1.25	113	535	0.50	97	563	7.75	370	1,758
				Wh.Pine Gp.	-	-	-	7.50	16	69	-	-	-	-	-	-	7.50	16	69
				White Fir	75.00	35.00	105	11.25	272	1,165	0.50	34	166	-	-	-	121.75	411	1,331
				Subalp.Fir	-	-	-	1.00	18	80	-	-	-	-	-	-	1.00	18	80
				Eng.Spruce	-	-	-	0.25	3	13	-	-	-	-	-	-	0.25	3	13
				Blue Sp.	-	5.00	27	0.25	19	93	-	-	-	-	-	-	5.25	46	93
				Aspen	25.00	42.50	125	3.25	51	245	-	-	-	-	-	-	70.75	176	245
Subtotal					125.00	100.00	358	37.25	791	3,605	4.25	376	1,791	0.50	97	563	267.00	1,622	5,959
Weighted Total	All	All	All		102.33	102.28	408	47.49	1,228	5,553	8.29	752	3,800	0.46	95	541	260.85	2,483	9,894

Table 21

Average Net Volume Per Acre By Species and Volume Stratum

PONDEROSA PINE SAWTIMBER TYPE

Species	Volume Stratum								Weighted Avg.		Percent	
	04 - P9B -M		05 - P9B - P		06 - P9A - M		07 - P9A - P		P9			
	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.
Douglas-fir	398.25	92.04	-	-	-	-	88.66	25.16	86.43	22.87	3.2	3.22
Ponderosa Pine	944.13	282.94	3,486.80	658.31	3,282.43	925.28	1,735.22	514.85	2,193.82	547.71	80.5	77.14
White Pine Group	-	-	-	-	-	-	-	-	-	-	-	-
White Fir	2,706.88	561.58	22.28	13.92	-	-	37.17	12.58	242.93	55.94	8.9	7.88
Blue Spruce	-	-	-	-	-	-	34.52	9.09	21.40	5.64	0.8	0.79
Juniper	-	-	-	-	-	-	-	0.40	-	0.25	-	0.04
Total Conifers	4,049.26	936.56	3,509.08	672.23	3,282.43	925.28	1,895.57	562.08	2,544.58	632.41	93.4	89.07
Aspen	2,204.93	880.79	-	-	-	-	11.62	12.98	181.39	77.63	6.6	10.93
Grand Total	6,254.19	1,817.35	3,509.08	672.23	3,282.43	925.28	1,907.19	575.06	2,725.97	710.04	100	100

Conversion Factors: Cubic Feet to Scribner Decimal C = 3.80
Cubic Feet to International $\frac{1}{4}$" = 4.50

Table 22

Stock and Stand Table

PONDEROSA PINE SAWTIMBER TYPE

Average Per Acre

Volume Stratum					10" D.B.H. Classes																
					1.0-4.9"	5.0-10.9"		11.0-20.9"			21.0-30.9"			31.0-40.9"			Total		
Number	Type	SSC	SC	Species	No. Trees	No. Trees	Cu. Ft.	No. Trees	Cu. Ft.	Bd. Ft.	No. Trees	Cu. Ft.	Bd. Ft.	No. Trees	Cu. Ft.	Bd. Ft.	No. Trees	Cu. Ft.	Bd. Ft.
04	P	LST	M	Doug.-fir	-	-	-	3.75	92	398	-	-	-	-	-	-	3.75	92	398
				Pond.Pine	-	12.50	72	6.25	211	944	-	-	-	-	-	-	18.75	283	944
				White Fir	375.00	-	-	7.50	280	1,301	3.75	282	1,406	-	-	-	386.25	562	2,707
				Aspen	-	100.00	762	5.00	119	556	-	-	-	-	-	-	105.00	881	556
Subtotal					375.00	112.50	834	22.50	702	3,199	3.75	282	1,406	-	-	-	513.75	1,818	4,605
05	P	LST	P	Pond.Pine	-	5.00	3	1.50	48	210	3.00	259	1,213	1.50	348	2064	11.00	658	3,487
				White Fir	50.00	5.00	7	.50	7	22	-	-	-	-	-	-	55.50	14	22
				Aspen	50.00	-	-	-	-	-	-	-	-	-	-	-	50.00	-	-
Subtotal					100.00	10.00	10	2.00	55	232	3.00	259	1,213	1.50	348	2064	116.50	672	3,509
06	P	SST	M	Pond.Pine	-	54.17	193	21.26	409	1,525	1.68	150	711	0.84	173	1007	77.95	925	3,243
Subtotal					-	54.17	193	21.26	409	1,525	1.68	150	711	0.84	173	1007	77.95	925	3,243
07	P	SST	P	Doug.-fir	-	1.53	8	0.60	14	60	0.05	3	17	-	-	-	2.18	25	77
				Pond.Pine	15.30	39.79	87	14.34	280	1,044	1.78	142	637	0.05	6	30	71.26	515	1,711
				Wh.Pine Gp.	5.10	-	-	-	-	-	-	-	-	-	-	-	5.10	-	-
				White Fir	10.20	1.53	7	0.20	6	26	-	-	-	-	-	-	11.93	13	26
				Blue Sp.	-	0.51	2	0.25	7	35	-	-	-	-	-	-	0.76	9	35
				Juniper	-	-	-	0.05	*	-	-	-	-	-	-	-	0.05	*	-
				Aspen	15.30	4.59	12	0.05	1	3	-	-	-	-	-	-	19.94	13	3
Subtotal					45.90	47.95	116	15.49	308	1,168	1.83	145	654	0.05	6	30	111.22	575	1,852
Grand Total	All	All	All		85.19	42.95	146	12.56	274	1,085	2.29	187	867	0.46	103	608	143.45	710	2,560

*Less than 0.5 cu. ft.

Table 23

Average Net Volume Per Acre By Species and Volume Stratum

SPRUCE-FIR SAWTIMBER TYPE

Species	Volume Stratum								Weighted Average		Percent	
	8 - SF9B - All		9 - SF9A - W		10 - SF9A - M		11 - SF9A - P		SF9			
	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.	B.F.	C.F.
Douglas-fir	8,334.38	1,677.69			1,100.37	225.83	783.80	162.08	1,134.97	232.65	06	06
Ponderosa Pine	-	-	-	-	00.51	00.44	-	-	00.38	00.33	-	-
White Pine Group	-	-	-	-	18.41	4.34			13.73	3.24	-	-
White Fir	-	-	-	-	354.71	87.35	747.79	151.43	429.13	98.48	02	02
Subalpine Fir	1,297.45	646.94	7,145.70	1,639.65	3,565.85	942.01	1,048.31	291.88	3,034.29	805.83	17	20
Engelmann Spruce	27,840.05	5,603.19	19,815.55	4,577.62	13,528.57	2,836.87	9,265.59	2,092.40	12,940.89	2,749.71	71	67
Blue Spruce	-	-	-	-	49.93	14.67	-	-	37.25	10.94	-	
Total Conifers	37,471.88	7,927.82	26,961.25	6,217.27	18,618.35	4,111.51	11,845.49	2,697.79	17,590.64	3,901.18	96	95
Aspen	-	-	-	-	778.02	207.87	872.44	185.37	772.34	195.85	04	05
Grand Tot.	37,471.88	7,927.82	26,961.25	6,217.27	19,396.37	4,319.38	12,717.93	2,883.16	18,363.00	4,097.02	100	100

Conversion Factors: Cubic Feet to Scribner Decimal C = 4.48
Cubic Feet to International $\frac{1}{4}$" = 5.19

Table 24

Stock and Stand Table

SPRUCE-FIR SAWTIMBER TYPE

Average Per Acre

Volume Stratum					10" D.B.H. Classes																
					1.0-4.9"	5.0-10.9"		11.0-20.9"			21.0-30.9"			31.0-40.9"			Total		
Number	Type	SSC	SC	Species	No. Trees	No. Trees	Cu. Ft.	No. Trees	Cu. Ft.	Bd. Ft.	No. Trees	Cu. Ft.	Bd. Ft.	No. Trees	Cu. Ft.	Bd. Ft.	No. Trees	Cu. Ft.	Bd. Ft.
8	SF	LST	All	Douglas-fir	500.00	25.00	282	2.50	65	286	7.50	902	4,800	2.50	429	2,360	537.50	1,678	7,446
				Subalpine Fir	-	50.00	368	10.00	279	1,297	-	-	-	-	-	-	60.00	647	1,297
				Engelmann Spruce	-	50.00	560	40.00	2,409	11,717	20.00	2,634	14,444	-	-	-	110.00	5,603	26,161
Subtotal					500.00	125.00	1,210	52.50	2,753	13,300	27.50	3,536	19,244	2.50	429	2,360	707.50	7,928	34,904
9	SF	SST	Well	Subalpine Fir	-	50.00	772	35.00	868	3,973	-	-	-	-	-	-	85.00	1,640	3,973
--				Engelmann Spruce	-	125.00	1,364	92.50	3,214	20,368	-	-	-	-	-	-	217.50	4,578	20,368
Subtotal					-	175.00	2,136	127.50	4,082	24,341	-	-	-	-	-	-	302.50	6,218	24,341
10	SF	SST	Med.	Douglas-fir	-	1.14	10	3.28	119	551	0.39	40	211	0.29	57	314	5.10	226	1,076
				Ponderosa Pine	-	-	-	0.06	-	1	-	-	-	-	-	-	0.06	-	1
				White Pine Group	-	-	-	0.24	4	18	-	-	-	-	-	-	0.24	4	18
				White Fir	-	3.40	12	1.58	53	281	0.29	22	128	-	-	-	5.27	87	409
				Subalpine Fir	73.86	41.47	267	23.24	606	2,797	0.97	62	322	0.06	7	35	139.60	942	3,154
				Engelmann Spruce	39.78	35.23	280	37.47	1,543	7,362	8.23	959	5,159	0.29	55	318	121.00	2,837	12,839
				Blue Spruce	-	0.57	4	0.29	11	50	-	-	-	-	-	-	0.86	15	50
				Aspen	-	11.94	78	3.97	126	604	0.11	4	21		-		16.02	208	625
Subtotal					113.64	93.75	651	70.13	2,462	11,664	9.99	1,087	5,841	0.64	119	667	288.15	4,319	18,172
11	SF	SST	Poor	Douglas-fir	-	1.92	8	1.34	33	94	0.76	61	314	0.38	60	329	4.40	162	737
				White Fir	-	-	-	1.54	43	191	0.77	71	216	0.19	37	340	2.50	151	747
				Subalpine Fir	38.46	15.39	90	8.27	182	827	0.38	19	95	-	-	-	62.50	292	922
				Engelmann Spruce	38.46	48.08	319	34.62	1,162	5,468	6.33	579	2,968	0.19	33	186	127.68	2,092	8,622
				Aspen	-	-	-	7.50	185	1,013	-	-	-	-	-	-	7.50	185	1,013
Subtotal					76.92	65.39	417	53.27	1,605	7,593	8.24	730	3,593	0.76	130	855	204.58	2,882	12,041
Weighted Total	All	All	All		110.20	89.42	634	67.10	2,306	11,012	9.73	1,032	5,475	0.69	125	726	277.14	4,097	17,213

GPO 856048

Table 25

Average Net Volume Per Acre By Species and Volume Stratum

ASPEN TYPE

Board Foot Volume - Scribner Decimal C -- Trees 9.0" D.B.H. and Larger.
Cubic Foot Volume in Trees 5.0" D.B.H. and Larger.

Species	Volume Stratum 16 Sawtimber			Volume Stratum 17 Poletimber		Weighted Average	
	Board Feet	Cubic Feet	Percent	Cubic Feet	Percent	Cubic Feet	Percent
Douglas-fir	429	81.13	03	25.45	02	40.48	03
Ponderosa Pine		-		31.19	03	22.77	02
White Pine Group		-		3.43	-	2.50	-
White Fir	846	178.95	08	50.73	05	85.35	06
Subalpine Fir	313	103.16	05	43.98	04	59.96	04
Engelmann Spruce	460	103.46	05	33.49	03	52.38	04
Blue Spruce	198	35.54	01	1.53	-	10.71	1
Aspen	6,113	1,771.72	78	938.61	83	1,163.55	80
Total	8,359	2,273.96	100	1,128.41	100	1,437.70	100

Conversion Factors:

Scribner Decimal C = 2.4
International $\frac{1}{4}$" = 2.8

Compartment List for San Juan Working Circle
San Juan National Forest

1 - Glade Block

001 Sand Rock
002 Big Water
003 Dove
004 Glade
005 Black Snag
006 Disappointment
007 Far Draw
008 Doe Park
009 Narraguinnep
010 Long Park
011 Gabin
012 Salter
013 Trimble
014 Biggs
015 House Creek
016 Boggy Draw
017 Beaver
018 Ground Hog

2 - Dolores Block

019 Dry Creek
020 Upper Stoner
021 Taylor Mesa
022 Little Taylor
023 East Stoner
024 West Stoner
037 Roaring Fork
038 Section House
039 Priest Gulch
040 Slope
041 Ryman
042 Scotch Creek
043 Burnett
044 Horse Creek
045 Morrison
046 Fall Creek
047 Geyser
048 John Bull
049 Sulphur
050 West Dolores
051 Willow Divide
052 Black Mesa
053 Lone Cone
054 Mid Peak
055 Wild (Dolores)
056 Dunton
057 Kilpacker
058 Truby
059 McJunkin
060 Silver
061 Barlow
062 Slate
063 Lizard Head
064 Flattop
065 East Dolores

3 - Mancos Block

025 Spruce Water
026 Burnt Logs
027 Lost Canyon
028 W. Turkey Cr.
029 Chicken Cr.
030 West Mancos
031 Middle Mancos
032 Cherry Creek
033 Hesperus
034 Fish Creek
035 Upper Lost Canyon
036 W. Bear Creek

4 - Columbine Block

066 Cascade
067 South Mineral
068 Ophir
069 North Mill Creek
070 Red Mountain
071 North Bear
072 Maggie
073 Elk Creek
074 West Lime
075 Deer Creek
076 Crater Lake
077 Wilderness (Columbine)
078 Lime Creek
079 Potato Hill
080 Reservoir
081 Pinkerton
082 Hermosa
083 Dutch Creek
084 Little Elk
085 Big Lick
086 Elbert
087 East Cross
088 Hermosa Park
089 Grassy
090 Black Canyon
091 Corral
092 Hotel
093 West Cross
094 Spruce
095 Big Bend

5 - Animas Block

096 Deer Creek
097 South Fork
098 La Plata
099 Lightner
100 Deep Creek
101 Junction Creek
102 Clear Creek
103 Buck Creek
104 Falls Creek
105 Haflin
106 Stevens
107 West Red Creek
108 Shearer
109 Young's
110 Coon Creek
111 Bear Creek
112 Canyon Creek
113 Tank Creek
114 West Florida
115 Grant
116 East Florida
117 Miller

6 - Pine Block

118 East Red Creek
119 Grimes
120 Vallecito
121 Wilderness (Pine)
122 East Mountain
123 Pine River
124 High Point
125 East Creek
126 Lion Creek
127 Wilson
128 Little Bear
129 East Bear Creek
130 Upper Beaver
131 North Beaver
132 South Beaver
133 Saul's Creek
134 Lange Canyon
135 Armstrong
136 Crowbar
137 Ute Creek
138 Green Canyon
139 Spring Creek

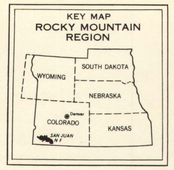
7 - Piedra Block

140 Ignacio
141 Fosset Gulch
142 Stollsteimer
143 Devil Mountain
144 Mule Mountain
145 Yellowjacket
146 Indian Creek
147 Sheep Creek
148 First Fork
149 Mosca Creek
150 Cold Creek
151 Horse Mountain
152 West Devil Creek
153 Chris Mtn.
154 Burns Canyon
155 Martinez Creek
156 O'Neal Park
157 Cottonwood Creek
158 Pagosa Creek
159 Corral Mountain
160 Sand Creek
161 Little Sand Creek
162 Middle Fork
163 Williams Creek
164 Shaw Creek
165 Wilderness (Piedra)

8 - Pagosa Block

166 Wilderness (Pagosa)
167 Fourmile
168 Turkey Creek
169 San Juan
170 Wolf Creek
171 East Fork
172 Elwood
173 Quartz Creek
174 East Sand Creek
175 Stymie
176 Coal Creek
177 Fawn Gulch
178 Mill Creek
179 Porcupine
180 Little Blanco
181 Upper Blanco
182 Fish Lake
183 Blue Lake
184 Hughes
185 Blanco Basin
186 Squaretop
187 Echo Canyon
188 Eightmile Mesa
189 Archuleta
190 Valle Seco
191 Coyote Park
192 Spiler
193 Winter Hills
194 Lower Blanco
195 Spence Creek
196 Navajo Peak

KEY MAP
ROCKY MOUNTAIN REGION



U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
RICHARD E. MCARDLE, CHIEF

SAN JUAN NATIONAL FOREST
COLORADO
NEW MEXICO PRINCIPAL MERIDIAN
1960

Scale 0 1 2 3 4 5 Miles

2410

COMPARTMENT MAP OF THE SAN JUAN WORKING CIRCLE

LEGEND

Block Boundary
Compartment Bndry.
Revised 12/1960
Going Sales
Planned Sales
Planned Roads
Revised 6-12-62 V.P.

FOREST SERVICE MAP - CLASS "A"

Prepared by U.S.F.S. at Regional Office, Denver, Colorado 1959-60 from Forest Service & U.S.G.S. Planimetric Maps and U.S.G.S. Topographic maps constructed by photogrammetric methods using aerial photographs.
Control by U. S. Coast and Geodetic, U. S. Geological & U. S. Forest Service Surveys.

Polyconic projection
North American datum.